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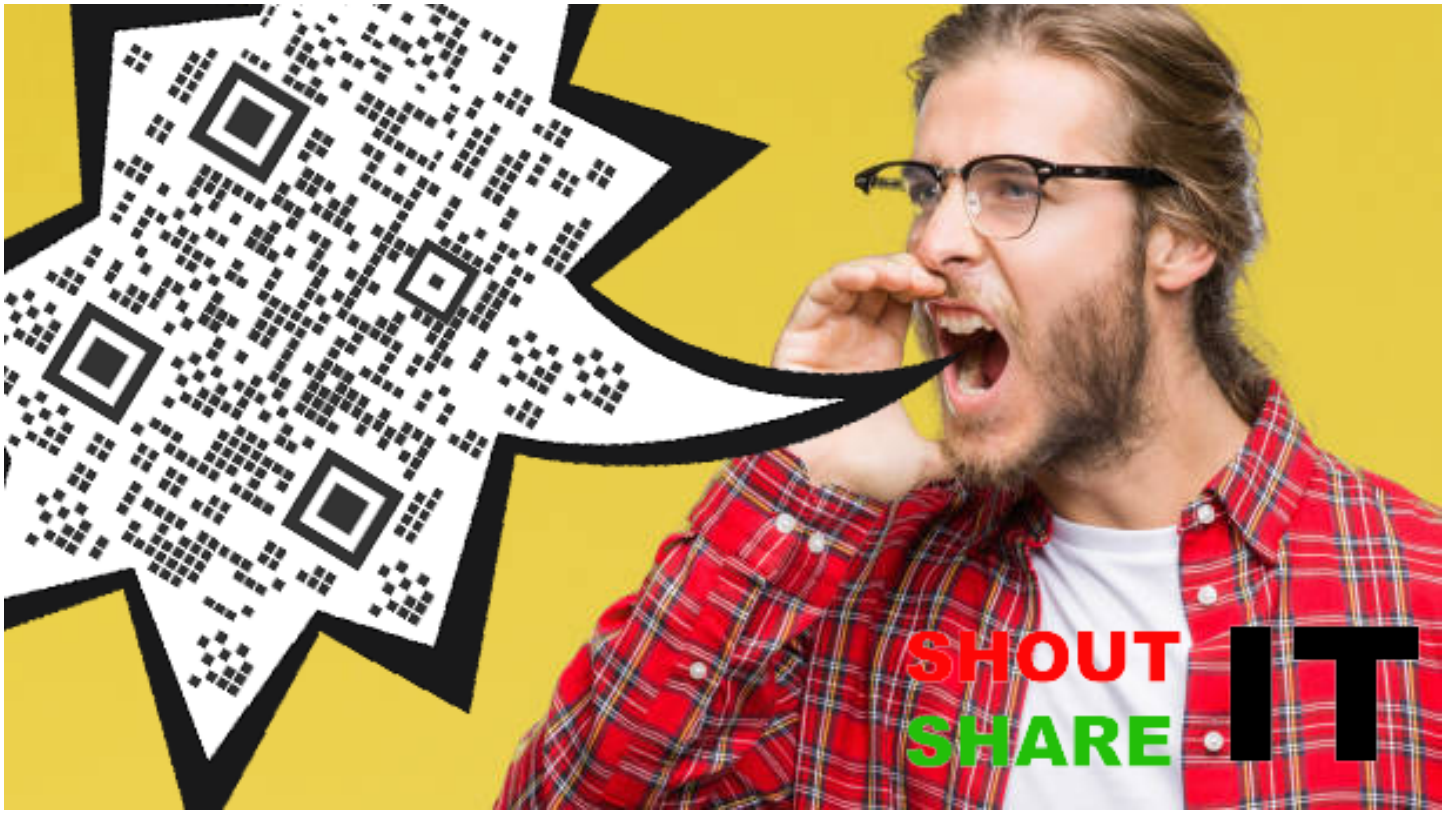
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A Review of the Genus Cryptocephalus in America North of Mexico (Chrysomelidae: Coleoptera)

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FRANK A. TAYLOR
Director, United States National Museum

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Introduction

Leconte in 1880 published the last general treatment and key to the members of the genus *Cryptocephalus* Müller. Since numerous changes were subsequently made and new species have been described, his paper is now out of date. This lack of an up-to-date key has greatly hindered recent work on the genus, and the need for a reexamination of the species and a new key is quite apparent.

The present study began as a thorough revision of a partial, unpublished manuscript key by the late C. Schaeffer, but the need for a more complete treatment of the genus, including descriptions and illustrations to confirm doubtful determinations, led to its present form. A total of 71 species and 33 subspecies are included herein. Three species are newly synonymized, and three species are revalidated. Twelve new species and six new subspecies are described.

This paper is based almost entirely on the specimens in the U.S. National Museum, a total of over 4,600 individuals; this series includes all but one (*pallidicinctus* Fall) of the North American species described previous to 1966. Numerous new state records and new host data have been compiled from these specimens.

My thanks are offered to John Wilcox of the New York State Museum and to Burdette E. White of Perris, California, for assistance during the study and for the loan of specimens, to Howard Evans of the Museum of Comparative Zoology for examination of one of Leconte's types, and to Hugh Leech of the California Academy of Sciences and to Charles Triplehorn of the Ohio State University for the loan of specimens.

History—The taxonomic history of the genus *Cryptocephalus* for North America began in 1787 when Fabricius described two species; in 1798, he described another species that was subsequently renamed because it was a homonym. In 1801, Fabricius added one more species. Oliver (1808) described three species, all presently valid. Germar (1824) described a single species now placed in *Cryptocephalus*. Say (1824) described nine species, two that remain in *Cryptocephalus* (one is a subspecies), two that are now synonyms, and five that are now placed in other genera. Randall (1838) described a single species here ranked as a subspecies. Newman (1840) described eight species; two remain in *Cryptocephalus*, two are now ranked as synonyms, and the other four are in other genera. Melsheimer (1848) described 16 species, only two of which now remain in *Cryptocephalus*. Haldeman (1849)

described the subgenus *Canthostethus* and twelve species that he placed in *Cryptocephalus*; four are now synonyms, and eight are accepted as valid. Suffrian (1852a) added four names to the list; three are now valid, and one is a synonym. Also, Suffrian (1852b) later added six names, two that are synonyms and four that are now valid. Then in 1858 he contributed three more names; two are presently valid and one now a synonym. Leconte (1859a and 1859b) described two new species, both of which are presently accepted. Crotch (1874) described *C. nigerrimus*, now ranked as a subspecies. Leconte (1880) presented a key to the North American species of *Cryptocephalus* known to him and described eight species; one is herein synonymized, and the other seven are accepted as valid. Jacoby (1880) described a single species that is now a part of the North American fauna. Casey (1884) added a single name to the list, but this is now a synonym. Linell (1897) described a presently valid species. Schaeffer (1904), in the first of a series of papers including members of the genus, described two species that are presently valid. In 1906, he added four new species. Blatchley (1913) described *sanfordi*, presently a synonym of *luteolus* Newman. Clavareau (1913) changed two of the names accepted at that time, and one remains in use. Schaeffer (1920) described three additional species, all from the southwest. Blatchley (1923) presented notes on this genus in which he correctly validated two names previously ranked as synonyms and synonymized one name. Fall (1932) described five new species in the genus; four remain unaltered; one, having been synonymized, is herein revalidated as a subspecies. Schaeffer (1933) described three new species and two new subspecies; in 1934 (in the last of his papers on this genus) he described three new species and two new subspecies in addition to contributing taxonomic notes. In 1937, Burdette E. White described one new species and two new subspecies.

Biology—Little is known about the biotic associations of *Cryptocephalus* species. The larvae are apparently all case bearers, and most are thought to feed on dead vegetable material on the surface of the soil. The adults feed on leaves, flowers, or fruits of plants, and the data on the labels of some specimens record them as feeding on economically important plants. A few species for which we have numerous records on adult habits apparently feed on a variety of plants. No North American species are recorded in the literature as important pests.

Morphology—The diagnostic characters of *Cryptocephalus* are as follows: Front edge of prosternum lateral to each coxa straight; claws simple; pronotum crenulate at its base. This combination of characters serves to distinguish the genus from all other North American genera of Cryptocephalinae.

Color and pattern: In what I consider to be the primitive species of the genus (the *basalis* group), the color is almost entirely black with red or orange markings. The head, body, appendages, pronotum, and much of the elytra are black, and usually there are red or orange basal and apical spots on each elytron. In some species (*arizonensis* group), the black of the elytra (and sometimes the pronotum) has a shining bluish or greenish luster. In these species, the pronotum and ventral surfaces are either black or orange.

In most species, the usual body color can best be described as creamy yellow, and this frequently varies to light, medium, or deep orange. Infrequently true yellows are represented among the species. Past descriptions often refer to yellow markings, but comparison of the specimens with a color chart shows that this color is often creamy yellow or light orange rather than yellow. The creamy yellow or orange frequently forms the background on both the pronotum and elytra for dark markings of various sorts. Sometimes these dark markings predominate and seem to form the background for light markings. In North American species, the dark markings vary from orange or red to brown shading to black. Occasionally the pronotum is nearly or quite unicolorous creamy yellow to orange or even red. In most species, the discal portion of the pronotum bears markings darker than the remainder that may be quite distinct to vague. The light (background) color most often appears on both sides of the disk as two oblique basal spots located on each side at the extreme lateral margin and at the extreme apical margin. This basic pattern (fig. 16), I believe, has served as the starting point for the other pronotal patterns as follows: Extension of the light basal spots produces the pattern of the pronotum of *cuneatus* Fall (fig. 11), in which there are apparently three subequal, subparallel, longitudinal dark vittae; addition of a light median stripe to this pattern leads to the pattern found in the *leucomelas* and *amatus* species groups (figs. 12 to 15). The elytral pattern, when present, varies greatly interspecifically. The pattern may be predominant light or dark markings and may consist of spots of transverse undulate (rarely straight) bands, or longitudinal dark vittae, or of median vittae and lateral spots, or may be irregular. In a few species, the elytra bear vague markings, only a humeral spot, or no distinct markings. Infrequently, the entire body is unicolorous yellowish or light orange. The dark elytral markings vary from distinct and sharply delimited to indistinct or obsolete.

Pubescence: The ventral surface, appendages, and pygidium of all species are more or less pubescent. The pubescence varies in density from the thick, whitish pubescence of *pubiventris* Schaeffer to the short and sparse pubescence of *cerinus* B. E. White. Only four species

bear distinct pubescence on the dorsal surface. The species *basalis* Suffrian, *mucoreus* Leconte, and *lunatus*, new species, have pubescence on both the pronotum and elytra; *pubicollis* Linell has pubescence only on the pronotum. The pubescence of the dorsal surface is rather short and not dense; it somewhat obscures the surface.

Shape: All the species are more or less compact, cylindrical, and blunt on each end, and there is no great variation in the general shape. The most elongate species is *atrofasciatus* Jacoby, up to 2.0 times as long as wide. Most species range from 1.6 to 1.8 times as long as wide. In the great majority of the species, the pronotal profile is more or less evenly rounded from front to back. In only two species (*gibbicollis* Haldeman and *aulicus* Haldeman), the pronotum is slightly to distinctly bulging at its center, and the outline of the pronotum is thus more gibbous than usual.

Head: The head can best be described as disklike; it is flat anteriorly and inserted into the thorax. When seen anteriorly, it is almost circular, and its frontal plane is nearly or quite parallel to that of the anterior margin of the prothorax. It fits tightly into the anterior cavity of the thorax and is either concealed or nearly concealed from a dorsal view. The surface is alutaceous to smooth and usually bears rather large, distinct punctation. The vertex often bears a short coronal suture or slight depression and frequently is more darkly pigmented than the remainder of the head. The eyes form the lateral margins of the head and are elongate reniform when seen anteriorly; they do not bulge from the head surface (from a dorsal view they do bulge somewhat), and the facets are small. The eyes do not reach the mandibles at their lower margin, and they are distinctly separated at their upper margin. The clypeus is large and distinct, and its basal suture is usually distinct and is located between the bases of the antennae. The lateral margins are distinct and usually diverging so the clypeus is generally broader apically than basally. The apical margin of the clypeus (the point of insertion of the labrum) is inwardly arcuate and sometimes bears pubescence. The labrum is rather broadly tab-shaped, generally broader than long, and has rounded corners. It frequently bears a transverse row of anteriorly directed hairs before the apex. The maxillary palpi are 3-segmented, short, and more or less stout; the labial palpi are 2-segmented and similar to the maxillary palpi in form.

Antennae: Each antenna is inserted at a basal corner of the clypeus; the points of insertion are separated by about the length of the first antennal segment and are distant from the eyes by about the horizontal diameter of an eye or a little less. The antennae are 11-segmented, are generally over one-half to nearly as long as the body, and are longer in the male than in the female. The first segment is the

stoutest and among the longest; the second is the shortest. The apical five or six segments are triangular and elongate and longer and broader than the intermediate segments; each apical segment is often about the length of the basal segment. The terminal segments are generally darker in color and more pubescent than the others.

Pronotum: The surface of the pronotum nearly always bears two sizes of punctures. The smaller punctures are often detectable only under higher powers of a microscope and may be absent or obscured by the alutaceous surface of the pronotum. The larger punctures vary widely in both size and density: they may be just distinguishable from the small punctures or large and coarse. The pronotum is most often nearly evenly rounded throughout and resembles a segment of a sphere. In two species (*gibbicollis* and *aulicus*), it is distinctly bulging medially. This shape is present to a lesser extent in other species. In a few species, the pronotum is not evenly rounded but is much flatter in profile than usual, for example, *leucomelas* Suffrian. The lateral margin is sharp and distinctly raised and meets the anterior margin at nearly a right angle to form a sharp, posteriorly directed point at its hind angle. The pronotum posteriorly is not margined and is closely applied to the elytra. The posterior edge of the pronotum bears numerous fine teeth that are normally concealed when the elytra and pronotum are close together, but usually the first few at each side are visible.

Scutellum: The scutellum is tongue-shaped and bears a distinct notch at the base. It does not lie flat, is nearly always higher apically, and extends above the surrounding elytra.

Elytra: The chief surface features of the elytra are the punctures. These nearly always form distinct rows and vary greatly in both size and density. In all species, the punctures form a scutellar and a marginal row of punctures (fig. 1). Also, in nearly all species, the remaining punctures form seven, eight, or nine rows (striae). Most often two or three rows at the side are crowded, confused, intertwined, or interrupted, and infrequently all the rows are distinct and even throughout. In a few cases, the lateral rows are distinct and even but have an additional short series of punctures behind the humerus. The rows are nearly always faintly to distinctly finer apically, and the combined first and second numbered rows and the last numbered row are usually distinct and clearly united at the apex (fig. 2). In some species, the punctures at the apex are confused, and the combined first and second rows and the last row are totally obscured in this area (fig. 3). When there are nine rows (this, I believe, is a primitive condition), the following unite at the apex: the second and ninth, the third and fourth, the fifth and sixth, and the seventh and eighth. The elytral punctures are largest and sparsest in *cribripennis* Leconte; in most species, the punctures are distinctly smaller and denser. A sinuous

epipleuron is present at the basal half of the elytra. The humerus is quite evident in nearly all species, and there is a tendency in some toward convexity of the elytral intervals, usually most evident at the side of the elytra.

Thoracic sternites: In all species, the anterior margin of the prosternum lateral to each coxa is straight from a side view and evenly rounded from an anterior view. The anterior margin of the prosternum between the coxae is usually produced into a lobe or spine but is unmodified in some. A lobe, when present, generally points anteriorly, or diagonally downward; spines generally point downward. The median portion of the prosternum is flat, slightly concave, or even convex. The posterior margin on each side behind the coxae is broadly emarginate, and each side is produced posteriorly into a more or less distinct, stout, pointed lobe. The coxae are inserted at about the middle of the prosternum and are separated by about their diameter or a little less. The mesosternum is quite short and partially overlaid by the prosternal processes; the visible portion is often nearly quadrate. The metasternum is distinctly wider than long and bears a longitudinal, median groove or depression. The metasternum is narrowest between the insertions of the second and third pair of legs and broadest at its side. The metepisternum is triangular and broadest anteriorly; it is generally rather coarsely sculptured and more pubescent than the rest of the ventral surface. The metepimeron is much reduced.

Abdomen: The abdomen consists of five dissimilar segments; all sutures except the fourth (usually), are distinct and straight. The first segment is the largest and at its center is usually nearly as long as the others combined. The second and third segments are subequal and shorter than the others; they are nearly parallel side to side or are wider laterally. The suture of the fourth segment lies at an angle to the others, and the segment is visible as a narrow triangle on each side or is narrowly visible at the middle and more broadly so on each side. The fifth segment is about half the length of the first, and the apical margin is broadly arcuate. At its center, the fifth segment bears a more or less broad deep pit (female) or is simple (male). The pygidium is quite large in all species; it is usually coarsely punctate and in some is more or less distinctly, longitudinally carinate at the center.

Legs: The first and second pairs of coxae are more or less globular, and the third pair is transversely oval. The trochanters are interstitial and somewhat triangular; the femora are stout and broadest at about their middle. The tibiae are a little longer than the femora, are broadest apically, and lack spines. Each tarsus is about two-thirds the length of a tibia, and its first three segments bear dense pads of pubescence

beneath; the third segment is bilobed. The last segment is rather broad apically, and the claws are divergent and simple.

Sexual characters: The most reliable character for distinguishing the sexes is the form of the fifth abdominal segment. In all females, this segment bears a distinct, deep depression at the center. The depression is nearly always broad and sharply margined anteriorly; there is often a rather long series of hairs arising from the anterior margin of the depression. In *striatulus* Leconte, this depression is less developed than usual but is still quite distinct. The fifth abdominal segment of the male at its center is convex to flat or even slightly depressed. Also, there are often sexual differences in the development of the anterior margin of the prosternum. When these occur, the male tends to bear a spine, and the female bears a lobe. Sometimes both sexes bear a lobe but that of the male is more pointed than that of the female. In a few species, there are distinct to barely detectable sexual differences in the color or color pattern; also, in some species, males are smaller than females. The color and size differences can sometimes be used for rapid sexing of specimens. In *mutabilis* Melsheimer and *insertus* Haldeman, nearly all males can be distinguished from females on the basis of these characters. In *mutabilis*, small individuals with the black markings are invariably males, and large individuals with the dark reddish markings are females. In *insertus*, the males are generally smaller and have more complete dark markings than the females. In both *venustus simplex* Haldeman and *v. ornatulus* Clavareau, the color patterns of the sexes are quite distinct. Unfortunately, the males of both these (I believe) are identical to the males of *v. venustus* F. In some species that show a distinct difference in the sizes of the sexes, there may be little or no overlap in length, but this has not been explored thoroughly.

Genitalia: The male genitalia of selected species have been extracted, cleared in KOH, and illustrated (figs. 112–140). Included are new species, their nearest relative, many of the new subspecies, and at least one member of species groups not represented by any of the former. Representatives of different species groups can often be distinguished on the basis of external appearance of these parts, but the genitalia of related species usually do not offer useful external characters. Once the genitalia are cleared, the internal processes become visible, and these offer characters useful in distinguishing species. I have found generally that the subspecies of a species show little or no differences in the internal and external form of the parts; for example, the genitalia of the subspecies of *venustus* are essentially identical; the same is true of the subspecies of *notatus* F.

Notes on the important findings resulting from the genitalic work are included under the appropriate species. The illustrative technique used to portray the genitalia (Coquille board) has been found ideal for

this purpose. It allows the degree of pigmentation of the parts to be shown, which is impossible to do with a simple line drawing. Female genitalia have not been examined.

Species groups—The following groups were formulated without reference to the species groups advanced by Suffrian (1858, p. 345). The groups that I here recognize and the basis for distinguishing these groups are somewhat similar to those of Suffrian. Primarily, I have depended on similarities in the elytral striae and the pronotal and elytral color pattern for grouping species. The characters presented as typical of or similar within the species of each group are briefly described, but no attempt has been made to make the characters that are discussed directly comparable between groups; in all cases, however, the elytral striae and color pattern are described. The groups are named on the basis of the species which most clearly shows the characters typical of the group. The characters listed are presented in approximate order of their reliability, the first character being the most distinctive for that particular group. Those least distinctive or consistent are at or near the end of the description.

Basalis group: *basalis* Suffrian, *binominis* Newman, *lunatus*, new species, *mucoreus* Leconte, *multisignatus* Schaeffer, *notatus* F., *pinicola* Schaeffer, *pubicollis* Linell, *pubiventris* Schaeffer, *quadruplex* Newman.

Head, pronotum, ventral surface, and appendages black or very dark; each elytron black with basal and apical spots red to orange, sometimes both joining at side, or sometimes with apical spot absent, infrequently with elytra entirely red to orange: usually with nine (sometimes eight) rows of small, distinct punctures, often with two or three rows at side confused; anterior margin of prosternum of male usually with a spine, sometimes with a pointed lobe, female usually with a lobe, sometimes simple; size generally medium to rather large.

I regard this as the most primitive group of species of North American *Cryptocephalus*. The nine rows of punctures seem to me to be basic; reduction and modification of these rows, I believe, has led to the form of the punctures shown by other species groups. The elytral color pattern as shown by *basalis* seems to be the starting point from which the patterns of other species have developed. From the *basalis* group may have developed the *quercus* group; compare the elytral pattern of *multisignatus* with that of *atrofasciatus* Jacoby.

Quercus group: *astralosus*, new species, *atrofasciatus* Jacoby, *quercus* Schaeffer, *umbonatus* Schaeffer, *vapidus*, new species.

Basic elytral pattern of dark markings of two or three transverse, undulate bands, sometimes absent or expanded; anterior margin of prosternum of both sexes produced into a broad lobe (sometimes pointed in male); with eight or nine rows of distinctly impressed

punctures, two or three rows at side confused or entwined; pronotum predominantly dark, usually with two indistinct light basal oblique spots, and lateral and apical margins vaguely lighter; size medium to large.

There is a similarity between the elytral pattern of *atrofasciatus* and that of *triundulatus*, new species, that may indicate a relationship between the members of this and the *badius* group.

Badius group: *badius* Suffrian, *cowaniae* Schaeffer, *contextus*, new species, *incertus* Olivier, *triundulatus*, new species.

Basic elytral pattern like that of *triundulatus* or *badius*, often somewhat expanded or reduced; pronotum predominantly dark, nearly always with lateral and apical margins yellowish, usually with two yellowish, oblique basal spots; with seven or eight rows of punctures, often with two rows at side confused behind humerus or interrupted and joining one another; anterior margin of prosternum somewhat produced to evenly arcuate in both sexes; moderate in size.

The elytral pattern of this group appears to me to have been pivotal in the development of the patterns of other groups of species. I find basic similarities that I interpret as indicating a relationship between this group and the following groups: *guttulatus*, *cupressi*, *calidus* (compare *badius* with the male of *mutabilis*), and *trizonatus*.

Guttulatus group: *guttulatellus* Schaeffer, *guttulatus* Olivier.

Each elytron with seven light (usually yellowish) spots on a darker background, spots subequal in size and generally separated by their diameters or less, number of complete spots from base to apex is 2–2–2–1 (also a partial spot present anteriorly at side); pronotum usually with two vague, oblique, yellowish spots at base; with seven or eight rows of punctures, rows behind humerus confused or often with adjacent rows interrupted and joining; size small to medium.

The pattern of this group is, I believe, clearly a modification of that of the preceding group. Some specimens of *cowaniae* almost exactly match the disposition of the spots at the apical two-thirds of the elytra in the *guttulatus* group. If the typical pattern of *cowaniae* is modified so that the light basal spots are expanded and the remaining spots enlarged and rounded, the pattern typical of this group results.

Cupressi group: *binotatus*, new species, *bivius* Newman, *castaneus* Leconte, *cupressi* Schaeffer, *disruptus*, new species, *duryi* Schaeffer, *egregius* Schaeffer, *leucomelas* Suffrian, *maccus*, new species, *pseudomaccus*, new species, *texanus* Schaeffer, *virginiensis*, new species.

Pronotum with four black to red, longitudinal, nearly parallel markings, sometimes running together or completely joined, rarely absent. Elytra with basic pattern of dark markings as follows: two large or medium discal spots, two usually medium lateral spots, two medium

or small apical spots, markings frequently reduced or modified, infrequently absent. Background color of dorsal surface yellowish to orange; usually with seven or eight rows of punctures, two or three rows at side usually confused, infrequently with punctures not forming distinct rows, punctures often larger and/or sparser than usual; anterior margin of prosternum of male usually with a pointed lobe, that of female often with a lobe; size moderate to rather large.

The species *duryi* and *binotatus* are atypical but are nearer to the *Cupressi* group than any other.

Calidus group: *albicans* Haldeman, *aulicus* Haldeman, *bispinus* Suffrian, *calidus* Suffrian, *gibbicollis* Haldeman, *insertus* Haldeman, *mutabilis* Melsheimer.

Basic elytral pattern of dark (usually black) markings as follows: from base of second, third, and fourth intervals to apex of second, and on most to all of sixth, seventh, and eighth intervals, pattern often reduced; pronotum predominantly dark, usually with more or less vague, oblique light spots at base; with eight, sometimes apparently nine rows of punctures, usually sixth and seventh rows confused, punctures generally smaller, less distinctly impressed than usual; anterior margin of prosternum evenly arcuate in both sexes, infrequently lobed; size moderate to large.

At first glance, the dark elytral pattern of *mutabilis* would appear to have little relation to the basic pattern of this group; however, in certain specimens of *insertus* with reduced lateral vittae and expanded inner vittae, the resulting pattern almost exactly matches that of many specimens of *mutabilis*. In typical specimens of *mutabilis*, the outer vittae are reduced to spots, and the inner are reduced to two spots each basally but rather expanded before their apices.

The *calidus* group is closely allied to the following, and the two could even be united due to the similarity of the basic elytral patterns.

Venustus group: *venustus* Fabricius, *obsoletus* Germar.

Anterior margin of prosternum of male with a stout spine, that of female with a V-shaped lobe; pronotum predominantly dark, usually with two vague, oblique, light spots at base; each elytron usually, with dark markings from base of second, third, and fourth intervals to apex of second, and on all of sixth, seventh, and eighth intervals; markings may be expanded or reduced; with nine, sometimes apparently eight, rows of punctures, often with two or three rows at side confused, reduced, or crowded; punctures generally smaller than usual or more distinctly impressed than usual.

Cuneatus group: *cuneatus* Fall, *trivittatus* Olivier.

Pronotum with three broad, longitudinal, reddish markings; each elytron at suture and sixth and seventh intervals reddish to black;

with eight rows of punctures, usually two rows at side confused, punctures sometimes finer than usual; ground color of dorsal surface yellowish to orange; anterior margin of prosternum in both sexes evenly arcuate.

Tinctus group: *implacidus*, new species, *lateritius* Newman, *ochraceus* Fall, *schreibersii* Suffrian, *striatulus* Leconte, *tinctus* Leconte.

Pronotal punctures large and deep to longitudinally elongate and producing a furrowed appearance; punctures at elytral apex sometimes regular, but most often confused; elytral color pattern, when present, consisting of three dark, transverse, indistinct, undulate bands; usually with nine rows of small distinct punctures, sometimes none confused, sometimes with two or three rows at side confused; anterior margin of prosternum of male usually lobed, often lobed and pointed, that of female evenly arcuate to somewhat lobed; small to moderate in size.

There may be a relationship between *insertus* of the *calidus* group and the members of this group.

Arizonensis group: *arizonensis* Schaeffer, *nanus* Fabricius, *sanguinicollis* Suffrian, *pallidicinctus* Fall.

Pronotum red or orange (except black in *sanguinicollis nigerrimus* Crotch) and elytra usually black, sometimes very dark with bluish or greenish luster and occasionally with basal portion of elytra at side yellowish or lighter than remainder; elytra with seven, eight, or nine rows of punctures, often with rows six and seven confused; anterior margin of prosternum of male produced into a lobe, that of female more or less produced.

I have seen no specimens of *pallidicinctus*, but by its description it is clearly a member of this group.

Amatus group: *amatus* Haldeman, *merus* Fall.

Basic elytral pattern consisting of dark markings on sutural, first, third, and fifth to last intervals; pronotum predominantly dark, usually with a median and two lateral, longitudinal dark markings, lateral and apical margins narrowly lighter; with eight rows of fine, distinct punctures, two or three rows at side confused or entwined; male with anterior margin of prosternum lobed and with a short, sharp, vertical spine just behind anterior margin or nearly half way back on prosternum, female with anterior margin lobed but with no spine; size moderate.

Fall (1932, p. 23) described the prosternal spine of *merus* as a unique structure; in comparison with *amatus* the spine is unique only in its position.

Snowi group: *cribripennis* Leconte, *simulans* Schaeffer, *snowi* Schaeffer.

With seven rows of punctures and an incomplete row between fifth and sixth rows, punctures often large and sparse; basic elytral dark markings consisting of vittae on intervals two, four, and six (latter formed of two united intervals); anterior margin of prosternum of both sexes produced into a broad, often pointed lobe; pronotum predominantly dark, with oblique, basal, yellowish markings, lateral and apical markings yellowish; size large.

Confluentus group: *alternans* Suffrian, *brunneovittatus* Schaeffer, *cerinus* B. E. White, *confluentus* Say, *defectus* Leconte, *dorsatus*, new species, *fulguratus* Leconte, *luteolus* Newman, *pumilus* Haldeman, *spurcus* Leconte.

Basic elytral pattern of dark markings consisting of complete vittae on intervals two, four, and six (latter formed by union of two intervals) often with pattern modified or absent; with seven rows of fine, distinct punctures, usually also with a short series behind humerus; anterior margin of prosternum of male usually produced ventrally into a pointed lobe, sometimes evenly arcuate, that of female sometimes produced into a lobe, often evenly arcuate; pronotum often with disk dark and with a vague pattern; size small to medium.

Specimens which differ in minor details of color and elytral punctation may be distinguished within this group of species and subspecies. The taxa within the complex are so close and ill-defined that the arrangement advanced here can be considered only tentative. I have found it impossible to delimit to my satisfaction the apparently undescribed taxa on the basis of external morphology alone and feel that a complete understanding of the interrelationships will probably have to await biological studies. Whether a given series of apparently similar individuals (including some described taxa) is to be considered a species or subspecies (and, if the latter, to which species it is allied) appears to be largely conjectural. Those taxa I have described are the ones most obviously distinct; others are not treated herein because of the difficulties.

The only species not assigned to any of the above groups is *trizonatus* Suffrian. I believe it properly belongs to a separate group that would include it and at least four other species from Central America with similar coloration. In the USNM collection, four and possibly five species are similar to *trizonatus;* of these, many have been determined as *trizonatus* but are clearly distinct from it.

Schaeffer's types—It is sometimes quite difficult to determine with certainty whether specimens in the USNM that have been accepted as Schaeffer cotypes or paratypes do actually represent types, or if certain specimens that have not been accepted as types should now be so labeled. Evidently all types of *Cryptocephalus* species and

subspecies described by Schaeffer (except paratypes of *snowi* in Kansas University) are now in the U.S. National Museum; some of these were clearly designated on labels by Schaeffer as types, but some were not; others have been designated (apparently by Barber) as cotypes and, it would appear, occasionally in error. This situation is complicated by the incomplete type data appearing in Schaeffer's original descriptions; rarely is the number of specimens given from which the species was described, and generally only a portion of the label data was published. In some cases, the label data as it appeared in print was altered from its original form or miscopied, and in some cases, even, more data were given than now appear on the labels.

In general, the type designations adopted by Barber have been retained; changes have been made in these only when there was no doubt in my mind that an error had been made and that a change was warranted. I have selected lectotypes for those species for which a type has not previously been designated.

TAXONOMIC CHARACTERS—The system of terminology employed here in naming and numbering the elytral striae and intervals requires explanation. All North American species possess a short series of punctures in the scutellar region that are called the scutellar stria (fig. 1); this does not extend beyond the middle of the elytra. The numbering of the striae begins with the next row of punctures (the first row of the apical half of the elytron) and continues to the side before the lateral margin. The regular series of punctures at the lateral margin is termed the marginal stria; this normally extends from the base to the apex of the elytra. The scutellar and marginal striae are referred to only by their names. Thus the inner and outer rows of punctures referred to in the key are the first and last rows of numbered striae.

Counting of the rows of striae on an elytron should start immediately behind the middle of the elytron; this will automatically exclude the

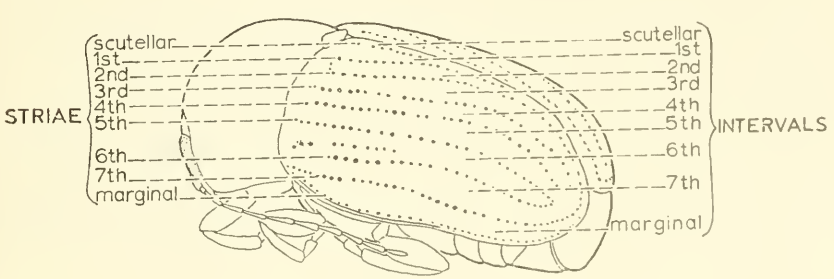


FIGURE 1.—*Cryptocephalus cerinus cerinus* B. E. White showing terminology used for elytral striae and intervals.

scutellar stria and will avoid the short series of punctures present in some species behind the humerus. Also, in those species with more or less confused rows of punctures at the side of each elytron (this includes most of the species), there is a lesser tendency for confusion of the rows behind the middle of the elytron, and the rows in this region will often be easier to count.

All intervals are named by the name or number of the stria immediately following it. Thus the scutellar interval is between the median suture and the scutellar stria, and the first interval is between the scutellar stria and the first stria, and so on.

In the following text when the punctures are described as being coarse, I mean that they are not sharply but broadly or irregularly impressed and thus impart a rather coarse texture to the surface. Note that the use of coarse does not refer to the size of the punctures; both small and large punctures can be and often are coarse. Coarse punctures disturb the surface reflection and alter the degree of smoothness of the surface; punctures that are not coarse but are sharply impressed do not or only slightly disturb the surface reflection or alter the degree of smoothness.

The pronotal and elytral drawings, and full-figure illustrations (figs. 4–111) will be a great aid in arriving at a determination because many species can be recognized by the illustrations alone. Elytral drawings of all species are presented except for *pallidicinctus* and the new taxa herein described; full-figure illustrations are provided for the latter (figs. 94–111). Many species exhibit small to great variation in color pattern. For the less variable species, I have illustrated the elytra of specimens that are about midway between the extremes in pattern. For those species in which the color pattern is quite variable or in which the sexes differ in color pattern, two elytral drawings are given. All the figures from 2 to 111 are drawn to the same scale. The genitalia (figs. 112–140) are much magnified and are all drawn to the same scale.

Numerous misspellings and incorrect citations of plant scientific names were found on specimen labels. These misspellings and errors are included in the data but are always in quotation marks to distinguish them from correct spellings and names.

The following key has been constructed to cover as many variations as feasible. Color-variable species frequently key out in two or three places. Even with this, the extreme examples of some species will not key properly; an attempt to provide for all variable forms would so complicate the key that it would impair rather than improve its usefulness.

Key to the North American Species of *Cryptocephalus*

1. Elytron black (some with metallic blue or green luster) and with a red to yellow basal marking and an apical spot (sometimes absent or connected with basal marking), rarely with additional light markings (figs. 20–32) 2
   Elytron not as above, usually light with dark markings, if predominantly black (some with metallic blue or green) without spots (figs. 19 and 33–93) 15
2(1). Pronotum pubescent 3
   Pronotum not pubescent 6
3(2). Posterior margin of basal elytral red spot diagonally straight or nearly so (fig. 24); elytra lacking pubescence; Arizona . . **pubicollis** Linell
   Posterior margin of basal elytral red spot concave or convex (figs. 20 and 21); elytra pubescent; Texas to Kansas to Kentucky 4
4(3). Basal elytral red spot larger and with posterior margin convex (fig. 21); elytral punctures larger, distinct; Texas . . . . . **basalis** Suffrian
   Basal elytral red spot smaller and with posterior margin concave (figs. 20 and 106); elytral punctures smaller, less distinct; Texas to Kansas and Kentucky 5
5(4). Basal elytral red spot broadly attaining suture at center and at side extending past middle of elytra (fig. 20); pubescence of dorsal surface denser; Texas to Kansas and Kentucky . . . . **mucoreus** Leconte
   Basal elytral red spot neither clearly attaining suture nor at side extending past middle of elytra (fig. 106); pubescence of dorsal surface finer; Texas . . . . . **lunatus**, new species
6(2). Basal spot attaining both scutellum and apical spot 7
   Basal spot attaining either scutellum or apical spot, never both . . 8
7(6). Basal and apical spots joining at sixth and seventh or eighth intervals (fig. 31); length 3.6 to 5.1 mm.; Canada to Texas to Utah. **notatus sellatus** Schaeffer
   Basal and apical spots joining at eighth or ninth and marginal intervals (fig. 32); length 5.0 to 6.3 mm.; Arizona. . . **pubiventris** Schaeffer
8(6). Entire basal half of elytra red or only intervals one to four black at base (fig. 27); Florida . . . . . **binominis rufibasis** Schaeffer
   Elytra and/or locality otherwise 9
9(8). Basal spot attaining scutellum (figs. 30, 32) 10
   Basal spot not attaining scutellum 11
10(9). Pubescence of ventral surface longer, denser; 5.1 to 6.2 mm.; Arizona (fig. 32) . . . . . **pubiventris** Schaeffer
   Pubescence of ventral surface shorter, sparser; 3.6 to 5.5 mm.; eastern to central U.S. (fig. 30) . . . . . **notatus quadrimaculatus** Say
11(9). Pronotum reddish at side; elytra with spots in addition to basal and apical markings (fig. 28); Arizonas . . . . **multisignatus** Schaeffer
   Pronotum black throughout; elytra with only basal and apical markings; east U.S. to Arizona 12
12(11). Dorsal surface faintly bluish; body 1.8 to 2.0 times as long as wide; apical spot reduced to absent (fig. 25); Arizona, New Mexico, Utah, Colorado . . . . . **pinicola** Schaeffer
   Dorsal surface usually not bluish; body 1.6 to 1.8 times as long as wide; various localities; apical spot present 13

13(12). Basal spot at its apex attaining at least first interval and often suture (fig. 26); southeastern U.S. . . . . **binominis binominis** Newman
Basal spot at its apex rarely extending inward beyond third interval. 14

14(13). Basal spot with inner margin inclined away from suture at apex (fig. 29); pronotum faintly bluish; length 3.3 to 4.8 mm.; body 1.6 to 1.7 times as long as wide . . . . . **notatus notatus** F.
Basal spot with inner margin straight or inclined toward suture at apex (figs. 22, 23); pronotum rarely bluish; length 2.9 to 4.0 mm.; body 1.7 to 1.8 times as long as wide . . . . **quadruplex** Newman

15(1). Punctures at elytral apex confused and completely obscuring inner and outer rows of puncture (fig. 3) 16
Punctures at elytral apex not or but slightly confused, inner and outer rows of punctures always distinct and usually clearly meeting (fig. 2) 22

16(15). Pronotal disk densely, longitudinally furrowed, sides densely punctate, dark reddish with light margins (fig. 8). **schreibersii** Suffrian
Pronotum coarsely to finely punctate throughout, color not as above. 17

17(16). Elytra unicolorous, with no dark markings (fig. 38); pronotum alutaceous; length 2.0 to 2.4 mm.; northeastern states to Iowa. **striatulus** Leconte
Elytra with vague to distinct dark markings or pigmented striae; pronotum not alutaceous; length 2.7 to 5.1 mm.; various localities 18

18(17). Dark marking of elytron (fig. 70) a broad longitudinal stripe, sometimes branched; pronotal punctures small to moderate. **incertus** Olivier
Dark marking of elytron transverse, forming no pattern, or vague, or of pigmented striae; pronotal punctures large, coarse 19

19(18). Elytral punctures largely confused, forming irregular or double rows throughout (fig. 35) . . . . . **lateritius** Newman
Elytral punctures forming clearly defined rows, fifth, sixth, or seventh rows sometimes confused 20

20(19). Dark elytral markings tending to form three broad, transverse bands (fig. 37); length 2.8 to 4.5 mm.; New York to Florida to Kansas. **tinctus** Leconte
Dark elytral markings much reduced, not as above; length 4.4 to 5.1 mm.; Florida to Texas 21

21(20). Rows six and seven of elytral striae largely to completely confused (fig. 36); Florida . . . . . **ochraceus** Fall
Rows six and seven of elytral striae uniform to somewhat confused (figs. 3 and 104); Texas to Louisiana . . . . **implacidus,** new species

22(15). Pronotum wholly black or dark brown 23
Pronotum not as above, with distinct to vague markings at least laterally or entirely light or reddish 25

23(22). Elytra wholly black (fig. 42); length 3.5 to 4.5 mm.; California. **sanguinicollis nigerrimus** Crotch
Elytra not wholly black, length 4.0 to 6.5 mm.; Arizona, Florida . 24

24(23). Small, 4.1 to 4.8 mm.; undersurface with short, rather sparse pubescence; Florida. . . . . **notatus fulvipennis** Haldeman

Larger, 5.0 to 6.3 mm.; undersurface with denser, moderately long, white pubescence; Arizona . . . . . **pubiventris** Schaeffer

25(22). Elytral disk largely to wholly black or dark brownish (some metallic blue or green), usually lateral margin partly or entirely yellowish . 26

Elytra generally red or pale and with or without markings; when mostly black or brown with scattered pale spots or vittae 31

26(25). Elytra at side yellow from base to apex; midwest to central states . . 27

Elytra at side black, or yellow only at base; various localities 28

27(26). Elytral disk entirely black (fig. 84). . . **venustus cinctipennis** Randall

Elytral disk black with more or less distinct yellowish markings (fig. 85). **venustus hamatus** Melsheimer

28(26). Elytra dark and distinctly metallic bluish or greenish; Arizona, Texas (fig. 43) . . . . . **arizonensis arizonensis** Schaeffer

Elytra black and shining, not bluish or greenish; various localities . 29

29(28). Legs and ventral surface mostly to completely orange; length 2.8 to 3.5 mm.; southeastern U.S. to Arkansas (fig. 44) . . . . **nanus** F.

Legs and ventral surface black; length 3.0 to 4.9 mm.; Rocky Mt. states 30

30(29). Head black; pronotum red; elytra black (fig. 41). **sanguinicollis sanguinicollis** Suffrian

Head black with yellow markings; pronotum red with apex yellowish, base dark; elytra black with yellow margin. . **pallidicinctus** Fall

31(25). Pronotum with a broad, median, longitudinal dark spot bordered each side by generally distinct yellow stripes (figs. 10, 11) 32

Pronotum not as above 33

32(31). Smaller, about 3.3 to 4.3 mm.; pronotal punctation variable, often dense and coarse (fig. 10); serial punctures of elytra usually larger and coarse (fig. 50); eastern U.S. . . . . **trivittatus** Olivier

Larger, 4.0 to 5.1 mm.; pronotal punctation small and fine (fig. 11); serial punctures of elytra usually smaller, feebly impressed (fig. 51); Florida, Georgia. . . . . **cuneatus** Fall

33(31). Pronotal medial line light, bordered by longitudinal dark stripes (figs. 12 to 15) 34

Pronotal coloring never as above 49

34(33). Elytral punctures pigmented, not or obscurely arranged in rows (figs. 54, 97). 35

Elytral punctures usually not pigmented, arranged in more or less regular rows 36

35(34). Elytral punctures larger (fig. 54); four pronotal dark stripes complete, lateral two arcuate to nearly straight (fig. 14); Texas . **duryi** Schaeffer

Elytral punctures smaller (fig. 97); four pronotal dark stripes reduced (fig. 13) to absent; California, Arizona . . . **binotatus**, new species

36(34). Pronotum with coarse, pigmented punctures, densest anteriorly and at side (fig. 9); Texas, Arizona . . . . . **merus** Fall

Pronotum with fine punctures or with coarse, not pigmented punctures 37

37(36). Elytral punctures confined largely to transverse dark markings, small and sparse on yellow regions; dark markings of each elytron consisting of a basal, transverse, undulate band, a subhumeral spot, two submedian spots, and two apical spots (fig. 100); Colorado. **disruptus**, new species

Neither punctures nor markings as above; various localities 38

38(37). Intervals two and four yellow throughout, devoid of dark pigment (figs. 39 and 40) 39
Intervals two and four dark, at least in part 41

39(38). First elytral interval lacking dark markings or only vaguely darkened near suture (fig. 39); Texas, New Mexico . **amatus amatus** Haldeman
First elytral interval dark in part or throughout; Colorado, New Mexico, Wyoming 40

40(39). Vitta on third interval broadly interrupted (fig. 95); pronotum red with only an indistinct median light stripe on disk (fig. 6).
amatus fractilineatus, new subspecies
Vitta on third interval not or narrowly interrupted (fig. 40); pronotum red or black with median stripe, two basal oblique spots and lateral margins yellow, oblique spots sometimes expanded or reduced (fig. 7).
amatus apicedens Fall

41(38). Pronotum laterally with a dark red to black spot, sometimes joining adjacent vitta (figs. 4 and 5); southeastern U.S. to Arizona . . . 42
Pronotum laterally lacking a dark spot; various localities 44

42(41). Elytra with a common, submedian, transverse, undulating band attaining lateral margin (fig. 105); pronotal spot larger, about half size of an eye, usually joining adjacent vitta (fig. 5); Arizona.
maccus, new species
Elytral markings not as above; pronotal spot smaller, not joining adjacent vitta (fig. 4); Florida to Arizona 43

43(42). Dark markings of dorsal surface black, more extensive (fig. 62); length 4.3 to 6.4 mm.; Florida to Texas . . . . . **bivius** Newman
Dark markings of dorsal surface bright red to dull red, less extensive (fig. 108); length 3.9 to 4.3 mm.; Arizona.
pseudomaccus, new species

44(41). Elytra at apical half with only two apical spots and a small (to absent) common sutural spot (fig. 103); Minnesota.
leucomelas trisignatus, new subspecies
Elytra at apical half with more extensive markings than above; locality not as above 45

45(44). Elytron with three pair of spots (rarely touching), basal pair largest (figs. 55 and 61) 46
Elytron not as above, if spotted, with discal two spots largest, often confluent (figs. 56, 58, and 59) 47

46(45). Pronotum with outer dark stripe on each side clearly wider than inner; inner of basal elytral spots broadly attaining suture (fig. 55); Louisiana . . . . . **cupressi** Schaeffer
Pronotum with outer dark stripe on each side about equal in width to inner stripe; inner of basal elytral spots not or narrowly touching suture (fig. 61); Texas . . . . . **texanus** Schaeffer

47(45). Basal transverse band of elytra attaining lateral margin and joining second elytral band at suture (fig. 59); Colorado.
leucomelas vitticollis Leconte
Either elytral markings or locality otherwise 48

48(47). Dark pronotal vittae and/or discal two spots of each elytron nearly always confluent (figs. 12, 57); California, Arizona, New Mexico.
castaneus Leconte
Dark pronotal vittae and discal two spots of each elytron rarely touching (figs. 15, 58); east U.S. to Utah and New Mexico.
leucomelas leucomelas Suffrian

49(33). Pronotum pale, with large central and one or two small lateral dark spots on each side (fig. 17); each elytron with eight dark spots and a common sutural spot (fig. 60), discal spots sometimes joined. **egregius** Schaeffer

Pronotum and/or elytra not as above 50

50(49). Elytron pale with only a single dark spot on humeral callus or no distinct markings present (punctures may be pigmented) 51

Elytron with more or less distinct markings or dark with light spots . 65

51(50). Pronotal disk densely, longitudinally furrowed, sides densely punctate (fig. 8); eastern U.S. . . . . **schreibersii** Suffrian

Pronotum not furrowed, evenly punctate; various localities 52

52(51). Small, length about 2.0 to 2.7 mm.; scutellar stria of six to nine punctures 53

Larger, length 3.3 to 7.5 mm.; scutellar stria of 3 to 15 punctures 54

53(52). Elytron with nine entire rows of punctures, these and pronotal punctures larger (fig. 38); northeastern U.S. to Iowa . **striatulus** Lconte

Elytron with seven entire rows of punctures, these and pronotal punctures smaller (fig. 69); Florida to Virginia . **pumilus** Haldeman

54(52). Raised margin at side of elytra and bordering epipleuron black or dark brown throughout (fig. 101). **gibbicollis decrescens**, new subspecies

Raised margin at side of elytra orange, yellow, or black only in part . 55

55(54). Pronotal disk inflated, coarsely punctate throughout; length 6.0 to 7.5 mm.; Fig. 75; Florida . . . . . **aulicus** Haldeman

Pronotum not inflated, evenly arcuate in outline; rarely coarsely punctate; length 3.4 to 6.0 mm.; various localities 56

56(55). Elytral punctures larger, pigmented, and predominantly confused, forming distinct rows only at side, apex, and sometimes at base (fig. 97); pronotal punctures rather coarse . . **binotatus**, new species

Elytral punctures not as above, forming distinct rows throughout; pronotal punctures not coarse 57

57(56). Each elytron with nine rows of punctures, sixth, seventh, or eighth sometimes confused (if in doubt, count an incomplete series as a row) 58

Each elytron with seven or eight entire rows of punctures, fifth, sixth, or seventh often confused 62

58(57). Ventral surface reddish and/or yellowish and clouded or margined with blackish to predominantly blackish 59

Ventral surface reddish or yellowish and without black 60

59(58). Length 4.1 to 5.8 mm.; punctures of adjacent striae separated by four or more times their diameters, striae less confused at side (fig. 88); New Hampshire to Virginia to Wisconsin. **venustus simplex** Haldeman

Length 3.9 to 4.0 mm.; punctures of adjacent striae separated by about their diameters, striae more confused at side (fig. 96); Arizona. **astralosus**, new species

60(58). More elongate, body 1.75 to 1.85 times as long as wide; dorsal surface distinctly shining (fig. 111); elytra generally with two vague, transverse bands; Arizona . . . . . **vapidus**, new species

Less elongate, body 1.5 to 1.6 times as long as wide; dorsal surface (especially pronotum) less shining; with vague longitudinal bands or no markings; Massachusetts to Florida to Louisiana 61

61(60). Larger, length 4.3 to 6.0 mm.; prosternal spine in lateral view short, pointed, not parallel-sided; elytra usually vittate (fig. 78); Virginia to Florida to Louisiana . . . . . **obsoletus obsoletus** Germar

Smaller, length 4.0 to 4.3 mm.; prosternal spine in lateral view elongate, nearly parallel-sided; elytra not or vaguely vittate (fig. 107); Massachusetts . . . . . **obsoletus indistinctus**, new subspecies

62(57). Fifth and sixth elytral striae confused and intertwined, striae usually darkly pigmented and strongly contrasting with yellow background (fig. 68); Arizona . . . . . **umbonatus** Schaeffer

Fifth and sixth elytral striae not confused or intertwined, striae pigmented or not (figs. 91 and 93); various localities 63

63(62). Ventral surface, legs, head, and pronotum unicolorous, very dull reddish orange, elytra creamy yellow (fig. 99); elytron behind humerus with one or two punctures in addition to regular rows; Texas.

dorsatus, new species

Color not as above; elytron behind humerus with four to seven punctures in addition to regular rows; California to Texas 64

64(63). Dorsal surface light orange-yellow to orange, pronotum without dark markings (sometimes with minute speckling); striae finer (fig. 93).

cerinus cerinus White

Dorsal surface orange to clouded reddish orange, pronotum with darker markings; striae coarser (fig. 91) . . . . . **spurcus spurcus** Leconte

65(50). Each elytron with at least one complete, dark, longitudinal stripe (sometimes vague) 66

Elytral markings of incomplete or interrupted stripes, spots, or markings transverse or irregular 84

66(65). Elytral vittae or markings narrow, each (except sometimes lateral spots) confined to one interval or to a single stria 67

Elytral vittae or markings broad, at least one at widest point including two or three intervals 77

67(66). Inner elytral vittae narrow, each confined to a single stria (fig. 71); southeastern U.S. . . . . **albicans** Haldeman

Inner vittae broader, each encompassing an interval; various localities 68

68(67). Elytron with two dark vittae or only vestiges (fig. 80); Texas.

brunneovittatus Schaeffer

Elytron with three dark vittae, outer two may be interrupted; various localities 69

69(68). Second vitta interrupted once near apex, third interrupted twice (fig. 63); Texas to Arizona . . . . . **snowi** Schaeffer

Vittae not as above; various localities 70

70(69). Dark markings of pronotum black, distinct, margins sometimes narrowly reddish 71

Dark markings of pronotum orange, red, or brown, vague to distinct, infrequently black in part 72

71(70). Background color of elytra light orange (fig. 92).

spurcus vandykei White

Background color of elytra creamy yellow (fig. 94).

alternans jungovittatus, new subspecies

72(70). Pronotum at side with a small, distinct, isolated dark spot; Fig. 47.

simulans simulans Schaeffer

Pronotum at side without a dark spot 73

73(72). Second and third elytral vittae distinct and each interrupted twice (fig. 49); Texas . . . . . **simulans conjungens** Schaeffer
Elytral vittae absent, vague, or not as above 74

74(73). Background color light orange to reddish orange, vittae rarely distinct, usually reduced and vague, sometimes absent (fig. 91); California . . . . . **spurcus spurcus** Leconte
Background color of elytra creamy yellow to light orange, vittae distinct, dark reddish to black; central states to California 75

75(74). Legs predominantly brownish or black (fig. 98).
confluentus melanoscelus, new subspecies
Legs predominantly yellowish or reddish 76

76(75). Pronotum predominantly to entirely dark orange to reddish, usually with yellowish only in two basal spots and at lateral and apical margins, with dark reddish to black lateral to each light basal spot (fig. 16); central states to Canada to California (fig. 90.)
confluentus confluentus Say
Pronotum predominantly light orange, basally at each side and on disk with vague reddish markings (fig. 89); Nevada.
cerinus nevadensis White

77(66). Anterior margin of prosternum with a stout spine or distinct V-shaped lobe 78
Anterior margin of prosternum simple, evenly arcuate, or with a broadly rounded or slightly pointed lobe 80

78(77). Elytron with inner of two vittae dark and distinct, outer vitta much reduced, represented by one, two, or three spots; females (fig. 87).
venustus ornatulus Clavareau
Elytron with both vittae distinct and complete or both complete but not distinct; males and females 79

79(78). Elytral vittae quite distinct, black, rarely dark reddish (fig. 86); striae finer, discal intervals flat; discal pronotal punctures round, separated on an average by two or more times their diameters.
venustus venustus F.
Elytral vittae much less distinct, light to dark reddish, rarely partly black (fig. 78); striae more distinct, discal intervals convex; discal pronotal punctures separated on an average by about their diameters, tending to become longitudinally elongate.
obsoletus obsoletus Germar

80(77). Elytral epipleuron all or mostly black, lateral raised margin dark or black; pronotum gibbous to strongly gibbous; Fig. 79.
gibbicollis gibbicollis Haldeman
Elytral epipleuron black in part, lateral raised margin yellow to orange; pronotum normal to somewhat gibbous 81

81(80). Averaging larger, length 5.4 to 6.7 mm.; Florida, Alabama, Georgia, and Texas; females; Fig. 72 . . . . . **bispinus** Suffrian
Averaging smaller, length 4.0 to 5.7 mm.; various localities; males and females 82

82(81). Outer elytral vitta interrupted once, twice, or nearly absent, sometimes confluent with inner vitta (fig. 74) . . . . . **insertus** Haldeman
Outer elytral vitta complete 83

83(82). Occurring in Texas; males (fig. 72) . . . . . **bispinus** Suffrian
Occurring in eastern U.S.; males and females (fig. 73) . **calidus** Suffrian

84(65). Each elytron with seven or eight subequal, approximately oval light spots separated by their diameters or less (figs. 52, 53); pronotal markings vague or absent 85
Elytral pattern not as above; pronotum often with distinct markings 86

85(84). Ventral surface and pronotum reddish; length 3.8 to 5.9 mm.; eastern to central states (fig. 53) . . . . . **guttulatus** Olivier
Ventral surface and pronotum yellowish; length 2.6 to 3.0 mm.; Texas; Fig. 52 . . . . . **guttulatellus** Schaeffer

86(84). Elytral punctures large, pigmented, those on yellow background not or scarcely arranged in rows (fig. 64); southern Texas.
cribripennis Leconte
Elytral punctures small, in distinct rows throughout 87

87(86). Elytra with two broad, transverse, dark reddish bands (fig. 19); pronotum with one broad, dark reddish band; Texas.
trizonatus Suffrian
Elytral and pronotal pattern otherwise; various localities 88

88(87). Raised margin at side of elytra and bordering epipleuron dark brown or black throughout; Fig. 101.
gibbicollis decrescens, new subspecies
Raised margin at side of elytra yellow, red, or orange throughout, rarely partly blackish 89

89(88). Elytron light, with only one to four small dark spots (fig. 75); pronotal disk inflated, coarsely punctate; length 6.0 to 7.5 mm.; Florida.
aulicus Haldeman
Elytral pattern otherwise; pronotum usually moderately gibbous; length 2.0 to 7.5 mm 90

90(89). Length 2.0 to 2.7 mm.; ground color light orange, pronotal and elytral markings reddish to brown and more or less vague (fig. 69); with seven striae and a posthumeral series . . . . . **pumilus** Haldeman
Length 2.8 to 7.5 mm.; markings otherwise; striae usually otherwise. 91

91(90). Dark elytral markings longitudinal and only on alternate intervals, usually on intervals two, four, and six, sometimes on only two and four or four and six, or may also be on seven and eight (figs. 89–92). 92
Dark elytral markings not as above, usually transverse, composed of spots, or irregular 98

92(91). With vague vittae on intervals two, four, and six (fig. 91); length 4.0 to 6.0 mm.; with seven striae and a short series of punctures behind humerus; California . . . . . **spurcus spurcus** Leconte
Either vittae, length, striae, or locality not as above 93

93(92). Length 5.0 to 6.5 mm.; punctures behind humerus largely confused and of varying sizes (figs. 47 to 49) 94
Length 2.8 to 4.6 mm.; punctures behind humerus not as above, quite regular in arrangement and size 96

94(93). Pronotum at side lacking an isolated dark spot; Texas (fig. 49).
simulans conjungens Schaeffer
Pronotum at side with an isolated dark spot; Arizona 95

95(94). Elytra with dark markings on suture and second interval vague to absent (fig. 48); pronotal spot distinctly darker than adjacent markings . . . . . **simulans eluticollis** Schaeffer

Elytra with dark markings on suture and second interval distinct (fig. 47); pronotal spot somewhat or not darker than adjacent markings . . . . . simulans simulans Schaeffer

96(93). Fourth interval nearly parallel-sided throughout (fig. 80); with seven regular striae and no short series behind humerus; length 3.4 to 4.6 mm. . . . . brunneovittatus Schaeffer

Fourth interval not parallel-sided, distinctly broadest before apex (figs. 65 and 66); with seven often sinuate striae and a short series behind humerus; length 2.8 to 3.3 mm. 97

97(96). Pronotum light red, elytra cream yellow with brown markings on second, fourth, and sixth intervals (fig. 66); Florida.

luteolus Newman

Pronotum and elytra cream yellow to light orange, dark elytral markings on fourth and sixth intervals (fig. 65); Texas

defectus Leconte

98(91). Pronotum black with lateral and much of apical margins light orange (fig. 109); each elytron with six paired black spots, inner basal spot obviously largest; Virginia. . . . . virginiensis, new species

Markings not as above 99

99(98). Dark discal markings of elytron attaining lateral margin just behind middle 100

Dark discal markings of elytron not attaining lateral margin behind middle 105

100(99). Length 5.0 to 7.5 mm.; dark elytral markings of two or three transverse undulating bands (figs. 45 and 46); southwestern U.S. 101

Length 3.7 to 5.0 mm.; dark elytral markings usually not of transverse bands; various localities 102

101(100). Body about 1.8 times longer than wide; dark elytral pattern tending to form three transverse bands of orange, red, or black, variable in development (fig. 46); with seven or eight striae, usually five, six, and seven confused . . . . . atrofasciatus Jacoby

Body about 1.6 times longer than wide; dark elytral markings tending to form two transverse bands of orange or red (fig. 45); with nine striae, usually six, seven, and eight confused . . . quercus Schaeffer

102(100). Elytron at base with dark markings broadly attaining lateral margin (fig. 82); pronotum lacking paired light spots at base; eastern to central states . . . . . badius Suffrian

Elytron at base with dark markings not attaining lateral margin; pronotum usually with paired light spots at base; central states to Texas and Arizona. 103

103(102). Pronotum unicolorous throughout or with margins vaguely lighter, never with light basal spots; dark elytral markings consisting of two or three narrow, orange, or red, more or less vague, often interrupted, transverse bands (fig. 67); Texas, Arkansas, Kansas.

fulguratus Leconte

Pronotum at side with distinct yellowish markings, these narrowly interrupted at middle, usually with paired yellow spots at base; dark elytral markings black, distinct (figs. 83 and 110); Arizona. . . 104

104(103). Dark elytral markings predominating in extent over light markings, those of each elytron broadly to narrowly joining beyond sutural region (fig. 83); pronotum dark reddish to black with yellowish markings . . . . . cowaniae Schaeffer

Dark elytral markings about equaling yellow markings in extent, not meeting beyond sutural region (fig. 110); pronotum orange or red with yellowish markings . . . . . **triundulatus,** new species

105(99). All dark elytral markings joining (fig. 102); length 4.2 mm.; Arizona. **contextus,** new species

Dark elytral markings not joining, with three to seven isolated spots in addition to other markings (figs. 76 and 77); length 4.3 to 6.5 mm.; eastern to central states and Texas . . . . **mutabilis** Melsheimer

Genus *Cryptocephalus* Müller

Cryptocephalus Müller, 1764, p. xiii. [Type-species *Chrysomela sericea,* designated by Latreille, 1810, p. 432; see Barber, *in* Blake, 1931, ps 2.]

Homalopus Chevrolat, 1837, p. 422 [*in* Dejean]. [Type-species *Cryptocephalus loreyi* Solier, by monotypy.]

Physicerus Chevrolat, 1837, p. 420 [*in* Dejean]. [Type-species *Cryptocephalus speciosus* Guerin, by monotypy.]

Strigophorus Chevrolat, 1837, p. 422 [*in* Dejean]. [Nomen nudum.]

Disopus Chevrolat, 1837, p. 425 [*in* Dejean]. [Type-species *Chrysomela pini* L. by monotypy.]

Protophysus Chevrolat, 1837, p. 422 [*in* Dejean]. [Type-species *Cryptocephalus lobatus* F., designated by Monros and Bechyne, 1956, p. 1123.]

Dicenopsis Saunders, 1842, p. 70. [Type-species *Dicenopsis haematodes* Boisduval, by monotypy.]

Anodonta Saunders, 1843, p. 66 [preoccupied, Lamarck, 1799]. [Type-species *Anodonta roei* Saunders, by monotypy.]

Idiocephala Saunders, 1845, p. 142 [described as subgenus]. [Type-species by original designation *Anodonta roei* Saunders. New synonymy.]

Proctophysus Redtenbacher, 1845, p. 118 [error for *Protophysus* Chevrolat].

Taxaris Gistel, 1848, p. 123 [replacement for *Disopus.*]

Canthostethus Haldeman, 1849, p. 245 [described as subgenus]. [Type-species *Canthostethus rugicollis* Haldeman by present designation (preoccupied,= *Cryptocephalus schreibersii* Suffrian).]

Mecostethus Stål, 1858, p. 61. [Type-species *Mecostethus sahlbergi* Stål, by monotypy.]

Euphyma Baly, 1877b, p. 224. [Type-species *Idiocephala flaviventris* Saunders (1845, p. 147), by present designation.]

Stegnocephala Baly, 1877a, p. 32. [Type-species *Cryptocephalus hemixanthus* Suffrian, by original indication (synonymized by Weise, 1921, p. 8).]

Ceropachys Burlini, 1953, p. 75 [described as subgenus]. [Type-species *Cryptocephalus kocheri* Burlini (preoccupied by Pic, 1951, p. 86, =*Cryptocephalus emiliae* Burlini, 1954, p. 174), by original designation. Preoccupied, Costa, 1847.]

Heterodactylus Medvedev, 1963, p. 38 [described as subgenus]. [Type-species *Cryptocephalus macrodactylus* Gebler, by original designation. Preoccupied, Spix, 1825.]

Asiopus Lopatin, 1965, p. 452 [described as subgenus]. [Type-species *Cryptocephalus flavicollis* F., by original designation. Preoccupied, Sharp, 1892.]

Burlinius Lopatin, 1965, p. 455 [described as subgenus]. [Type-species *Cryptocephalus fulvus* Goeze, by original designation.]

Geoffroy (1762, p. 231) is usually cited as author of this genus. Because he did not use the requisite binary system of nomenclature,

however, the Commission on Zoological Nomenclature in Opinion 228 (Opinions and Declarations, vol. 4, part 18, p. 211, issued April 1954) placed this work on the Official Index of Rejected and Invalid Works in Zoological Nomenclature. The first valid description of *Cryptocephalus* is found in Müller's Fauna Insectorum Fridrichsdalina (1764, p. xiii).

The first five synonyms in the list are here credited to Chevrolat by virtue of Dejean's introductory statement (1837, xiii) that he used names created by Chevrolat and by the citation of Chevrolat after these genera in the list.

Homalopus Chevrolat (*in* Dejean, 1837) is cited in Neave (1939, v. 2, p. 681) as a nomen nudum; however, the accompanying citation in Dejean's list of the name *loreyi* (Solier, 1836, p. 687, not Dejean) constitutes an indication and thus validates the name *Homalopus*.

The name *exaratus* Dejean is cited with the new generic name *Strigophorus* Chev. in Dejean's list; evidently *exaratus* was not published previously, so both it and *Strigophorus* are nomina nuda.

The generic name *Disopus* has generally been credited to Stephens, 1839; it first appeared, however, in Dejean's catalog (1837, p. 425) and was there credited to Chevrolat. The accompanying citation of the Linneaus species *pini* (not Fabricius) described in 1758 as *Chrysomela pini* is an indication and validates the name *Disopus* as of 1837, with Chevrolat as its author.

Idiocephala has generally been recognized as a valid genus, and when included in the synonymy of *Cryptocephalus*, it has been followed by "pars." This, I believe, has been influenced by the treatment of Baly (1877a, p. 31) in which he states that "*S. speciosa*, Boisduval" (probably *speciosus* Guérin) and *catoxantha* Saunders may be considered as types. Neither *speciosa* nor *catoxantha* were included among the species in the original description of *Idiocephala*, so neither can be the type-species. In the original description, the generic name is followed by "Type A. Roei"; this clearly serves as the type-species designation and refers to *Anodonta roei* Saunders (1843, p. 67). The latter species is now considered a subspecies of *Cryptocephalus consors* Boisduval (1835, p. 588); consequently *Idiocephala* is a synonym of *Cryptocephalus*.

Clavareau in Coleopterorum Catalogus (1913, p. 202) listed *Aporocera* Saunders as, in part, synonymic with *Idiocephala;* however, none of the species originally included in *Aporocera* are now in *Idiocephala* or *Cryptocephalus*, so *Aporocera* is not a synonym.

Three of the names in the list of generic synonymy (all described as subgenera) are preoccupied. I will not propose replacement names for these because I find it quite easy to dispense with subgeneric names.

The species in the following account are arranged alphabetically so they may be located readily.

Cryptocephalus albicans Haldeman

FIGURE 71

Cryptocephalus albicans Haldeman, 1849, p. 252.

Pronotum: Usually light orange with disk and large basal triangular area each side rather reddish, sometimes dull creamy yellow throughout; punctation dual, larger punctures minute to small.

Elytra: Light orange or creamy yellow and with dark reddish to black markings. Markings as follows: first stria usually dark at base to dark throughout; second interval usually vaguely darkened at base; second stria black to (and sometimes beyond) middle of elytra; third stria sometimes dark at base; fourth stria usually dark at apex; at side with complete black vitta from humerus to apex of seventh interval, vitta sometimes reduced apically. With eight (sometimes apparently nine) rows of punctures, sixth and seventh (or, when nine rows, sixth, seventh, and eighth) rows confused; punctures as large and dense as usual, distinctly smaller at elytral apex; inner and outer rows distinct and clearly meeting at apex.

Prosternum: Anterior margin broadly, not strongly lobed in female; feebly lobed in male.

Length 4.8 to 6.3 mm.

DISCUSSION.—The six Florida specimens before me have the elytral intervals finely, transversely rugose; this significantly reduces the shininess of the elytra. In two Georgia and three South Carolina specimens, the rugosity is reduced to absent, and the elytra are distinctly shiny. The single Mississippi specimen has the elytra finely, transversely wrinkled and shiny. Two specimens from Florida were taken on *Cassia* species.

DISTRIBUTION.—Twelve specimens have been seen from Florida, South Carolina, Mississippi, and Georgia.

Cryptocephalus alternans jungovittatus, new subspecies

FIGURES 94, 115

General: Body 1.64 to 1.74 times as long as wide; dorsal surface shiny, lacking pubescence, most of ventral surface with short, sparse, whitish pubescence.

Head: Light orange or yellowish, antennal insertions and median longitudinal line on vertex black, labrum dark reddish; front with moderately coarse, small punctures, vertex anteriorly with a slight depression; clypeus sharply delimited at sides, feebly so at base, distinctly broadest at apex, somewhat concave. Antennae a little over two-thirds length of body in male, a little less than two-thirds length of body in female.

Pronotum: Background color light orange or creamy yellow, dark markings black, in general not sharply delimited, margins often brown to reddish, orange or yellowish areas at sides and near apex often speckled with reddish or brownish. Dark markings as follows: On most of disk and basally on each side; laterally each side a small spot; discal markings narrowly touching basal spots (holotype) or not (allotype). Punctation dual, smaller punctures minute, moderate in density, larger punctures small, rather sparse.

Elytra: Background color light orange, dark markings black, sharply delimited. Markings of each elytron as follows: on sutural stria; on second, fourth, and sixth intervals, vittae on second and fourth intervals joined at base (holotype) or not (allotype), weakly joined at apex (allotype) or not (holotype), vitta on sixth interval somewhat expanded laterally at humerus; seventh stria and lateral margin beyond middle black. Each elytron with seven striae and a short series behind humerus; punctures rather small, usually forming even rows, rows five and six uneven or a little confused, latter more often so; punctures distinctly smaller toward apex; inner and outer rows distinct and usually meeting at apex.

Ventral surfaces: Prosternum and mesosternum light orange or yellowish, former clouded with brownish at side; metasternum yellowish and clouded with brownish or blackish, especially at sides; metepisternum black; abdomen predominantly yellowish basally at center, at apex, and at sides, remainder clouded with brownish or blackish; femora with anterior face clouded with brownish, margins predominantly yellowish, posterior face brownish or black throughout; tibiae with outer margin brown, darkest at apex, inner margin yellowish, lightest at base; tarsi brown. Anterior margin of prosternum produced ventrally into a distinct, pointed lobe in male, lobe less produced in female. Fifth abdominal segment somewhat depressed at center in male, or deeply depressed into an oval fovea in female. Pygidium with distinct, rather dense punctures, black basally, yellowish to light orange apically.

Length: 4.7 to 5.0 mm.

Type data.—The description is from two individuals taken at Monterey, California, on July 30, 1927, by D. H. Blake. The male holotype (type number 69252) and the allotype are in the U.S. National Museum.

Discussion.—The external differences exhibited by this subspecies and two specimens of *C. alternans alternans* Suffrian from Mexico in the USNM collection are primarily a matter of coloration. In *a. alternans*, the discal and lateral dark markings of the pronotum broadly join; in *a. jungovittatus* they do not or just narrowly join.

Also, the lateral pronotal spot is distinctly larger in *a. alternans* than in *a. jungovittatus*. The seventh elytral stria of *a. alternans* is not darkly pigmented; that of *a. jungovittatus* is pigmented. The metasternum and abdomen of *a. alternans* are predominantly black; those of *a. jungovittatus* are mostly yellowish or brownish. The anterior faces of the femora of *a. alternans* are yellowish, and each has a moderate-sized, nearly median black spot; this part of the femora of *a. jungovittatus* is mostly brownish with the margins yellowish. The tibiae of *a. alternans* are black throughout; those of *a. jungovittatus* are yellowish and brown. I find no differences between the external and internal form of the male genitalia of these subspecies.

This subspecies (and *confluentus melanoscelus*) is described in detail because of the closeness of members in the *confluentus* group and the difficulty in assigning with certainty specific and subspecific status in this group.

Cryptocephalus amatus amatus Haldeman

FIGURE 39

Cryptocephalus amatus Haldeman, 1849, p. 253.

Pronotum: Creamy yellow with four longitudinal orange or black bands. Two median bands broadest at middle, lateral two bands broadest basally, sinuate, sometimes vaguely coalescing near apex with inner bands. Punctation dual, larger punctures minute to small.

Elytra: Creamy yellow with black markings, punctures dark to black. Markings as follows: third interval, vaguely darkened to black at basal fourth to third and near apex; fifth and sixth intervals darkened to black at apical half; humerus black; eighth interval vaguely darkened to black nearly throughout. With eight rows of punctures (sometimes evidently nine near base), fifth, sixth, and seventh rows confused, punctures a little larger than usual, quite distinct to apex; inner and outer rows distinct at apex, nearly always clearly meeting.

Prosternum: Lobed anteriorly and with a short, sharp, vertical spine behind margin in male; that of female broadly lobed and somewhat produced.

Length: 3.4 to 4.3 mm.

DISCUSSION.—A single biological note records a specimen as taken on foliage of *Solanum elaeagnifolium* Cav. (*"Elagnifolium Solanum"*).

DISTRIBUTION.—Only three specimens have been examined; one each from Alpine and Chisos Mts., Texas and one from Melrose, New Mexico. These are the first precise locality records for this subspecies.

Cryptocephalus amatus apicedens Fall

FIGURES 7, 40

Cryptocephalus apicedens Fall, 1932, p. 22.

Pronotum: Yellow to (sometimes) light orange with four broad, light reddish to nearly black longitudinal vittae, latter frequently coalescing and interrupting or narrowing intervening yellow; punctation dual, larger punctures minute to small.

Elytra: Yellow to (sometimes) light orange with black markings. Markings as follows: scutellar interval usually darkened to black; first interval dark reddish to (usually) black; second interval dark reddish to (usually) black nearly always throughout; intervals five to and including eight dark reddish or (usually) black nearly throughout; sixth interval at base and seventh at apex often yellowish to varying degrees; vittae nearly always sharply delimited by striae. With eight rows of punctures (sometimes apparently nine at base), fifth, sixth, and seventh confused, punctures a little larger than usual, distinct to apex; inner and outer rows distinct at apex and nearly always clearly uniting.

Prosternum: Male with anterior margin lobed and with a short, sharp, vertical spine behind margin; female with anterior margin broadly lobed and rather produced, lacking a spine.

Length: 3.4 to 4.3 mm.

DISCUSSION.—Fall (1934, p. 174) synonymized his *apicedens* (incorrectly cited as *apicidens*) with *amatus* Haldeman. I find sufficient differences between Haldeman's *amatus* and specimens that agree closely with Fall's description of *apicedens* to justify ranking *apicedens* as a subspecies of *amatus*. In *a. amatus*, the first elytral interval is not darkened; the third interval at about the basal third is vaguely darkened to black and vaguely to distinctly darkened at the apex; the fifth and sixth intervals (the fifth stria becomes obsolete) are distinctly darkened to black at the apical half, the humerus is black, and the seventh interval is vaguely darkened at the base to black nearly throughout. In *a. apicedens*, the first interval is black or dark, and this dark vitta continues to the apex; the third interval is dark or black throughout though sometimes interrupted near the apex. The fifth interval (and the combined fifth and sixth beyond the middle) is black or dark throughout; the humerus and eighth interval are black or dark. The latter two vittae are joined at the middle or are confluent throughout.

DISTRIBUTION.—The nine specimens examined are from Fort Wingate, New Mexico, and Colorado Springs, Colorado.

313-144—68——3

Cryptocephalus amatus fractilineatus, new subspecies

FIGURES 6, 95, 116

Head: Front creamy yellow with inverted V from vertex to antennal insertions deep orange, clypeus and labrum more or less orange, antennae of male about three-fourths length of body, basal five segments dull orange to brownish, last six segments dark brown.

Pronotum: Deep orange with light markings creamy yellow, not sharply delimited; a narrow median, longitudinal, yellowish, indistinct stripe at anterior half; lateral margin yellowish, narrowly so at basal half, more broadly so at anterior half; anterior margin narrowly yellowish; with vague indications of light, oblique basal spots.

Elytra: Ground color creamy yellow, dark markings black, sharply delimited by striae. Dark markings of each elytron as follows: on suture from base to apex; on first interval except basal third; on basal third and apical sixth of third interval; on humerus and sixth and seventh intervals to past middle, latter markings joining those of fifth interval at middle. Rows of punctures in yellow areas more or less darkly pigmented. Punctures as in *a. amatus*.

Ventral surface: Prosternum at center, mesosternum and side pieces, and first abdominal segment basally at center yellowish; prosternum at side and legs basally orange, latter nearly brown apically; metasternum, metepisternum, and first four abdominal segments (with above exception) reddish black; fifth abdominal segment reddish at middle, orange at side; pygidium reddish, nearly black at center. Anterior margin of prosternum in male as in *a. amatus*.

Length: 3.8 mm.

TYPE DATA.—Described from a single male specimen bearing the following data: Platte County, Wyoming, June 30, 1951, R. E. Pfadt collector; USNM type number 69247.

DISCUSSION.—This subspecies is most similar to *a. apicedens* Fall; the most apparent difference between the two is the extent of the vitta on the third interval. In *a. apicedens*, this vitta is continuous throughout or narrowly interrupted near the apex. In *a. fractilineatus*, this vitta is broadly interrupted from before the middle to before the apex. The subspecific name (meaning broken line) refers to this interrupted vitta. The male genitalia of *a. amatus* and *a. apicedens* are essentially identical to this subspecies in external and internal form.

Cryptocephalus arizonensis arizonensis Schaeffer

FIGURE 43

Cryptocephalus arizonensis Schaeffer, 1904, p. 225.

Pronotum: Orange to red, often with basal oblique spots and margins vaguely lighter; punctation dual, larger punctures minute to small.

Elytra: Dark, shining metallic green or blue, epipleuron yellow to (more often) dark reddish. With nine rows of punctures, rows six, seven, and eight confused, punctures as large, dense as usual, finer apically as usual; inner and outer rows distinct to slightly confused at apex, usually meeting.

Prosternum: Anterior margin in male distinctly produced into a broadly V-shaped lobe; female with anterior margin rather produced into a broad lobe.

Length: 4.2 to 5.4 mm.

Discussion.—The two Schaeffer cotypes are in the U.S. National Museum, both are females from Pinal Mountains, Arizona; they bear the type number 42280. The specimen with Schaeffer's determination label is hereby designated the lectotype and is so labeled.

Pallister (1953, p. 30) described the subspecies *arizonensis schrammeli* from Durango, Mexico.

Schaeffer (1906, p. 233) recorded the species from oak.

Distribution.—Twenty-six of the 28 USNM specimens are from southeast and north central Arizona; one is from Alpine, Texas, and another is from Mescalero, New Mexico.

Cryptocephalus astralosus, new species

Figures 96, 114

General: Body about 1.8 times as long as wide; dorsal surface distinctly shining, lacking pubescence; most of ventral surface with short, sparse, whitish pubescence.

Head: Dull light orange; front and clypeus with moderate sized, rather dense punctures; clypeus not sharply delimited at sides or base, distinctly broadest at apex. Antennae of male about three-fourths length of body, first four segments dull orange, outer seven dark brown.

Pronotum: Dull light orange, with darker speckling except in broad transverse, oblique band at base, anteriorly on each side, and at apex. Punctation dual, smaller punctures minute and sparse, larger punctures small, not dense.

Elytra: Dull light orange, humerus faintly darker, punctures dark. Each elytron with nine rows of rather large punctures, these much the largest at about center of elytron (sometimes sixth row reduced and evidently with eight rows); rows six, seven, and eight more or less confused; punctures much smaller apically; inner and outer rows distinct and clearly meeting at apex.

Ventral surface: Prosternum, mesosternum, and legs dull light orange; metasternum and most of abdomen dark brown to nearly black; first abdominal segment at middle orange, sides of each segment with light, sometimes vague spots. Pygidium with median carina, carina and margins black or dark, sides yellowish to orange. Anterior

margin of prosternum produced ventrally into a broad, blunt lobe in male. Fifth abdominal segment in male faintly depressed.

Length: 3.9 to 4.0 mm.

Type data.—This description is from two nearly identical males, both taken at Flagstaff, Arizona, on "VI–23–37," by D. J. and J. N. Knull. The holotype is in the OSU collection; the single paratype is in the USNM collection.

Discussion.—The species is superficially similar to *venustus simplex*. The two are readily separated by the comparative sizes of the elytral punctures. In *astralosus*, the punctures of adjacent striae are separated by about their diameters; in *v. simplex*, they are separated by four or more times their diameters. Also, *astralosus* is known only from Arizona, and is 3.9 to 4.0 mm. long. *C. v. simplex* is known from New Hampshire to Virginia to Wisconsin and is 4.1 to 5.8 mm. long.

The Central American species *sordidus* Suffrian is closely related to *astralosus*. A single specimen in the USNM collection determined as *sordidus* is markedly similar in form, color of the dorsal surface, and elytral punctation to *astralosus*. The chief difference is that the head, prosternum, and mesosternum of *sordidus* are almost entirely black; these parts of *astralosus* are dull orange throughout. Also the latter measures, 3.9 to 4.0 mm. long, and the single specimen of *sordidus* is 4.5 mm. long.

Cryptocephalus atrofasciatus Jacoby

Figures 46, 119

Cryptocephalus atrofasciatus Jacoby, 1880, p. 48.

Pronotum: Light orange to red, usually with basal oblique spots and margins yellow or lighter than remainder, not sharply delimited; surface punctation dual, larger punctures minute to moderate in size.

Elytra: Usually yellow or orange with three transverse, generally distinct, undulating orange, red, or (usually) black bands. When bands black, these sometimes expanded and partly to largely confluent, elytra thus sometimes predominantly black with vague to distinct elongate yellow spots. With eight rows of punctures, sixth, seventh, and usually fifth rows entwined, punctures as usual in size and density, finer apically as usual; inner and outer rows distinct at apex, nearly always clearly meeting.

Prosternum: Anterior margin in male produced into broad V-shaped lobe; female with anterior margin somewhat produced into a broad lobe.

Length: 5.0 to 7.5 mm.

Discussion.—This species is one of the most variable in the genus in coloration. Continuous intermediates exist between the one extreme in which the elytra are yellow with rather vague orange bands and the

other in which the elytra are almost entirely black. The extreme forms are few so these are not provided for in the key.

DISTRIBUTION.—The 54 specimens in the U.S. National Museum are from Arizona, New Mexico, and Colorado.

Cryptocephalus aulicus Haldeman

FIGURE 75

Cryptocephalus aulicus Haldeman, 1849, p. 249.

Pronotum: Red to orange with two basal oblique spots, lateral and apical margins yellowish, light areas not sharply delimited, latter often expanded and with discal and lateral basal areas orange or reddish; disk distinctly gibbous in profile; punctation dual, smaller punctures rather dense, larger punctures large and quite coarse, infrequently moderate to small in size and moderately coarse.

Elytra: Creamy yellow to orange with dark spots. Each elytron usually with subequal dark reddish or black spots as follows: near apex of second interval; at base of third interval; at or near apex of sixth interval; on humerus, sometimes with any or all spots (except humeral) reduced or absent. With eight rows of punctures, sixth and seventh rows confused, punctures as large as but generally sparser than usual, finer apically as usual; inner and outer rows distinct at apex and nearly always clearly meeting.

Prosternum: Anterior margin in both sexes evenly arcuate.

Length: 6.0 to 7.5 mm.

DISCUSSION.—Notes on this species refer to its being taken on flowers of *Befaria racemosa* Vent. and on *Asimina pygmaea* (Bartr.) leaves.

DISTRIBUTION.—Forty specimens have been seen, all collected in Florida. Previous papers have included Georgia as part of the distribution of the species, but no specimens from this state are in the USNM collection. The northernmost record among the individuals I have seen is from Enterprise, Florida, just south of Daytona Beach.

Cryptocephalus badius Suffrian

FIGURE 82

Cryptocephalus badius Suffrian, 1852a, p. 315.

Pronotum: Orange to deep red, often with lateral and apical margins partly to mostly yellow; punctation usually dual, small punctures sometimes evidently absent, large punctures small to minute.

Elytra: Each elytron orange to deep red and with yellow as follows: at base from behind scutellum laterally to fifth interval, usually continuous, narrowed, or interrupted at second interval and narrowed at fourth interval; at middle of side from fifth interval to lateral margin; near apex on third, fourth, and seventh intervals; at apex. With seven

rows of punctures and a short series behind humerus, fifth and sixth rows interrupted at middle and joining behind middle, row sometimes confused beyond junction; punctures as usual to larger than usual, finer apically as usual; inner and outer rows distinct at apex and clearly meeting.

Prosternum: Evenly arcuate and somewhat produced in both sexes.

Length: 3.6 to 4.6 mm.

Discussion.—A single specimen was taken on cotton. Wilcox (1954, p. 385) records it as beaten from walnut.

Distribution.—The 69 specimens examined were collected in Pennsylvania, Maryland, Delaware, Virginia, West Virginia, Kentucky, Tennessee, Florida, Mississippi, Kansas, and Oklahoma.

Cryptocephalus basalis Suffrian

Figure 21

Cryptocephalus basalis Suffrian, 1852b, p. 54.

Pronotum: With fine, silvery pubescence; black throughout; punctation dual, larger punctures moderate, dense.

Elytra: With fine, silvery pubescence. Each elytron black and with following orange to red: basal half (except humerus and suture behind scutellum); apex, basal markings not attaining apical spot, posterior margin of basal spot convex. With nine rows of punctures, sixth and seventh rows sometimes confused, punctures as large and dense as usual though often less distinct than usual; inner and outer rows at apex distinct and usually meeting.

Posternum: Anterior margin in male with a large, sharp, downward and posteriorly directed spine; anterior margin in female with a small, downwardly directed process.

Length: 4.7 to 5.8 mm.

Discussion.—This species and *mucoreus* have been confused in the literature, but, as pointed out by Wilcox (1953, p. 51), the two are distinct.

Douglass (1929, p. 8) recorded the species from sumac (*Rhus glabra L.*) and sorghum in Kansas; these records may be in error.

Distribution.—Only five specimens of this species have been seen, and all are from the Davis Mountains of Texas. Wilcox (1953, p. 51) recorded it from Arizona.

Cryptocephalus binominis binominis Newman

Figure 26

Cryptocephalus binominis Newman, 1841, p. 78.

Pronotum: Black (usually) to dark reddish throughout; punctation dual, larger punctures minute to small.

Elytra: Each elytron black or dark reddish with light orange to red as follows: lateral one-half (or slightly less) at base with inner posterior portion of spot extending inward, nearly or quite attaining suture, leaving broad scutellar area black; apical fourth or fifth; basal and apical spots never meeting. With nine rows of punctures (sometimes evidently with eight), usually fifth, sixth, seventh, and eighth rows confused, sometimes one much reduced; punctures as large and distinct as usual but generally sparser, finer apically as usual; inner and outer rows distinct at apex, usually clearly meeting.

Prosternum: Anterior margin in male with a small, vertical, V-shaped lobe; anterior margin in female produced into a broad, rather pointed lobe.

Length: 3.6 to 4.8 mm.

Discussion.—A single specimen in the USNM collection was taken on *Pinus sylvestris L.*

Young (1959, p. 104) recorded this species as a fossil.

Distribution.—The 34 specimens in the USNM collection are from Florida, Alabama, Georgia, South Carolina, Tennessee, Virginia, and the District of Columbia.

Cryptocephalus binominis rufibasis Schaeffer

Figure 27

Cryptocephalus binominis rufibasis Schaeffer, 1933, p. 322.

Pronotum: Black throughout, shining; punctation dual, moderate in density.

Elytra: Basal half of each elytron bright red throughout (type) or with vague to distinct black markings near scutellum, at most with intervals one to four black at base; apical half of elytron black with large, bright red spot at apex; basal and apical red spots never meeting. With eight rows of punctures (sometimes evidently nine), rows five, six, and seven confused, punctures as large and distinct as usual though sparser than usual, finer apically as usual; inner and outer rows distinct at apex and usually clearly meeting.

Prosternum: Anterior margin in male produced into a short, distinct, rather sharp spine; anterior margin in female produced into a short, rather broad lobe.

Length: 4.2 to 5.0 mm.

Discussion.—Schaeffer's two cotypes are in the U.S. National Museum; both were taken at Punta Gorda, Florida, on November 13. One is a male; the other a female. The male bears Schaeffer's determination label and the type number 69068 and is here designated the lectotype.

In addition, I have assigned two individuals to this species. They agree closely with the types except that both have black at the base

of each elytron near the scutellum. The black area is small in one and fairly large in the other; the latter individual approaches the condition in *b. binominis*. The lectotype has no indication of black at the elytral base, but the cotype has a faint indication of black.

DISTRIBUTION.—All four specimens seen are from Florida; the two that are not types are from Paradise Key and Tampa.

Cryptocephalus binotatus, new species

FIGURES 13, 97, 112

General: Body 1.66 to 1.80 times as long as wide; dorsal surface moderately shining, lacking pubescence, ventral surface with short, sparse, whitish pubescence.

Head: Dull light orange, vertex and antennal insertions darker orange; front with rather small, indistinct punctures; clypeus flat, sides sharply delimited, less distinctly so at base, distinctly broadest apically; antennae of male as long as body, those of female about two-thirds as long as body, orange to light brownish throughout.

Pronotum: Basic color light orange; male with four longitudinal dark reddish stripes, not sharply delimited, often a little abbreviated and somewhat irregular, outer two may be interrupted medially; female with development of dark markings variable, sometimes with four rather abbreviated, irregular stripes, usually much reduced, often with traces of stripes or just basal traces of outer stripes (holotype), or absent; punctation usually dual, with small punctures dense, larger punctures rather large and slightly to distinctly coarse, sometimes with larger punctures very coarse and surface rather rugose and obscuring small punctures.

Elytra: Light orange with punctures dark reddish to nearly black. Punctures best developed in some males, these with seven or eight rather easily traced rows; most males and nearly all females with punctures quite confused and forming distinct rows only apically, sometimes basally also; adjacent discal punctures sometimes irregularly connected by pigment; punctures smaller at apex; inner and outer rows distinct and usually clearly meeting.

Ventral surface: Nearly uniformly light orange throughout, legs with apices of femora more or less light orange, remainder of legs darker orange to nearly reddish; prosternum of male with anterior margin produced into a broad lobe, female with anterior margin feebly, broadly produced; pygidium longitudinally carinate, light orange, rather coarsely punctate.

Length: 4.1 to 5.0 mm.

TYPE DATA.—The species is described from ten specimens. The holotype (female, USNM type number 69248) was taken at Yuma, Arizona, in June, 1909 by A. McLachlan. The allotype, four male and

four female paratypes were taken at Winterhaven, California, on June 25, 1952, by D. J. and J. N. Knull; the allotype and six of the paratypes are in the Ohio State University collection. Male and female paratypes are in the USNM collection.

Discussion.—The species is separable from its nearest relative *duryi* by the development of the pronotal stripes and the elytral punctures. In *duryi*, the pronotal stripes are sharply delimited and complete; in *binotatus*, they are irregular and less sharply delimited to incomplete, much reduced, or even absent. The elytral punctures of *duryi* are quite large, confused, and have only faintly evident (or no) traces of alignment into rows. There is a tendency toward lateral interconnection of the discal punctures by reddish pigment. The elytral punctures of *binotatus* are smaller, distinctly aligned into rows at least apically, sometimes also basally (and even throughout in some males), and the punctures are infrequently interconnected by pigment. This species is named for the type which has two dark pronotal spots.

Cryptocephalus bispinus Suffrian

Figure 72

Cryptocephalus bispinus Suffrian, 1858, p. 347.

Pronotum: Red to orange with lighter basal oblique spots (sometimes vague), lateral and apical margin orange or yellow, lighter areas usually not sharply delimited, rarely almost entirely red with lateral and apical margins yellowish; punctation dual, larger punctures minute to small.

Elytra: Each elytron creamy yellow to orange with two dark orange to red or even black vittae as follows: from base of second, third, and fourth intervals to apex of first interval, always complete (rarely with scutellar and first interval also dark); from humerus to apex of fourth, fifth, and sixth intervals, nearly always complete, rarely interrupted once. With eight rows of punctures, sixth and seventh rows confused, punctures small, dense, much finer apically; inner and outer rows distinct at apex, usually clearly meeting.

Prosternum: Anterior margin evenly arcuate in both sexes.

Length: 4.0 to 6.7 mm.

Discussion.—The species has been previously reported only from Florida. During this work, I encountered individuals from Georgia, Alabama, and Texas. The 14 southeastern specimens are all females and range in length from 5.6 to 6.7 mm. The 21 Texas specimens consist of 10 females and 11 males; the females range in length from 5.4 to 6.2 mm., and the males from 4.0 to 4.9 mm. All the Texas specimens are from the eastern part of the state. I have found no significant differences between the southeastern and Texas females of this species,

though the Texas specimens are slightly smaller and the vittae usually are more reddish. The Texas specimens that I accept as males of *bispinus* are slightly lighter in color and average a little larger than males of *calidus*, but I find no reliable external characters for distinguishing the two. I suspect that southeastern males of *bispinus* are mixed with *calidus* in our material. C. *calidus* occurs within the eastern range of *bispinus*, and I am unable to distinguish the male of *bispinus* from males of *calidus* from this region. Because the unrecognized males of *bispinus* from the southeast are not provided for in the key, they are likely to key to *calidus*. Males of *bispinus* from Texas will run to the correct name in the key.

Collection notes record specimens as taken on sugarcane, in cotton fields, and on *Stillingia sylvatica* L.

Distribution.—The 42 specimens examined are from Florida, Alabama, Georgia, and Texas.

Cryptocephalus bivius Newman

Figures 4, 62, 113

Cryptocephalus bivius Newman, 1840, p. 249.

Pronotum: Creamy yellow to orange with four longitudinal, sharply delimited, usually more or less parallel-sided black vittae from base to apex, and a small black spot on each side; lateral two vittae may be slightly sinuate, a little expanded, or reduced. Punctation dual, larger punctures small to minute, sometimes coarse.

Elytra: Creamy yellow to orange, usually lighter at sides and apex, with sharply delimited black markings. Dark markings as follows: at side a rather large, basal spot centered behind humerus (frequently reduced to one or two spots); a common, transverse spot centered before apex of sutural stria, usually attaining fourth interval, sometimes reduced; a common sutural spot centered before union of first and second striae, sometimes reduced to two spots or absent; an oval spot at each side just behind middle, usually extending from fifth to eighth interval, sometimes reduced, never absent; infrequently some markings confluent; at extreme of least development, pattern with rather small humeral and lateral spots and two small apical spots. With eight rows of punctures, sixth and seventh rows confused, fifth row sometimes reduced, punctures larger, sparser than usual, finer to apex; inner and outer rows distinct at apex, usually clearly meeting.

Prosternum: Anterior margin in male produced into a short V-shaped lobe, anterior margin in female evenly arcuate.

Length: 4.3 to 6.4 mm.

Distribution.—All 36 specimens in the U.S. National Museum are from Florida and Georgia.

The species has previously been recorded from Texas, but none of the specimens in the USNM collection are from this state. It is possible that these records represent misidentifications of *leucomelas* or *texanus*, as both are similar to *bivius*.

Cryptocephalus brunneovittatus Schaeffer

FIGURES 80, 118

Cryptocephalus brunneovittatus Schaeffer, 1904, p. 226.

Pronotum: Dull orange to orange or reddish orange, often with light basal oblique spots, lateral and apical margins vaguely lighter; punctation dual, larger punctures small to minute; surface shining.

Elytra: Dull orange to orange and with reddish striae and vittae. With vague to distinct red to dark reddish vittae as follows: at basal two-thirds of fourth interval, apical one-third of interval usually vaguely darker; at apical half of sixth interval, vittae sharply delimited by striae. With seven rows of punctures, all even and distinct, punctures sometimes larger than usual, always sharply impressed, distinct to apex; inner and outer rows distinct at apex and clearly meeting.

Prosternum: Anterior margin evenly arcuate in both sexes.

Length: 3.4 to 4.6 mm.

DISCUSSION.—There are three specimens (two females, one male) in the U.S. National Musuem, each designated on two separate, plain labels as "type," and also on a third, red, museum label as cotypes; they bear the number 42281. The collection data are as follows: "Esprza Rch., Brownsville, Tex." One of the females was taken on May 29; the others do not bear the date of collection. Two additional specimens (with differing data) had been placed with the cotypes but bear no type designation, and I have not accepted these as types. One of the females in the type series (the one bearing the date of collection) has a Schaeffer determination label; I have labeled it, and it is here designated as lectotype.

All individuals in the U.S. National Museum have the elytral vittae light reddish to dark reddish (never black as given in the original description). Infrequently these vittae are vaguely indicated or essentially absent. The first vitta occupies the fourth interspace and is vague or absent at the apical third. The second vitta occupies the sixth interspace and is usually indistinct to absent at the basal half. The humerus is always more or less reddish.

Schaeffer (1904, p. 227) was in error in stating that the males bear a large round impression on the last abdominal segment. This is always a female character in *Cryptocephalus*.

Label data record specimens as taken on cowpea leaf, on *Dolichus minimus* L. (*"Dolicholus minima"*) leaf, and in cotton fields.

Distribution.—The 52 individuals in the USNM collection were taken in the southern fourth of Texas.

Cryptocephalus calidus Suffrian

Figures 73, 117

Cryptocephalus calidus Suffrian, 1852, p. 241.
Cryptocephalus carinatus Leconte, 1880, p. 202. [New synonymy.]

Pronotum: Orange to dark red, usually with two light, oblique basal spots and with lateral and apical margins yellowish or lighter, light markings usually not sharply delimited. Punctation dual, larger punctures small to (infrequently) moderate in size and coarse.

Elytra: Creamy yellow to (sometimes) orange with dark vittae. Each elytron with two longitudinal black to (occasionally) dark reddish vittae as follows: from base of second, third, and fourth intervals to or near apex of second interval (vitta always complete, rarely expanded); from humerus to apex of fourth and combined fifth, sixth, and seventh intervals (vitta infrequently interrupted once, sometimes expanded). With eight rows of punctures, fifth, sixth, and seventh rows confused, sixth sometimes greatly reduced, punctures as large, dense as usual, distinctly finer to apex; inner and outer rows distinct at apex and usually clearly meeting.

Prosternum: Anterior margin in both sexes evenly arcuate, not produced.

Length: 4.2 to 5.6 mm.

Discussion.—Schaeffer (1934, p. 458) synonymized *calidus* with *insertus* on the basis of the inadequacy of the characters presented by Leconte (1880, p. 202) as distinguishing the two. In the USNM series, I find two distinct species mixed under the two names. In the one species, the elytral vittae are nearly consistent in development, and the outer are rarely interrupted. This species I interpret as Suffrian's *calidus* on the basis of agreement with his description and notes. He described *calidus* as very similar in color and color pattern to *venustus* F. and makes no mention of the vittae as being interrupted (as they are in the other species in the series). In the second species, the inner vitta of each elytron is complete and often expanded (especially in the male), and the outer vitta is interrupted once, twice, or nearly absent. In some males, the interrupted outer vitta is confluent with the inner. This condition best fits Haldeman's description of the elytra of his *insertus* as follows: "extreme margins and disk black with two confluent vittae, leaving the exterior margin, apex, and a few streaks of flavous." I interpret Haldeman's name as referring to this species. Males of *insertus* range in length from 3.8 to 4.4 mm., and the inner elytral vittae are often expanded and confluent with the spots

representing the outer vitta. The female ranges in length from 5.0 to 5.8 mm.; the inner vitta is rarely expanded and the pronotum is usually darker than that of the male.

Leconte (1880, p. 202) distinguished *carinatus* (described from Kansas) on the form of the prosternum, i.e., "carinate for its whole length." Examination of a long series of individuals of *calidus* and specimens from Kansas assignable to *carinatus* shows this character to be variable in its development. The prosternum of most specimens of *calidus* is flat or slightly concave, but in occasional individuals, this is convex to obtusely carinate. Specimens from Kansas usually have the prosternum carinate, but this carina ranges from distinct to absent. I find no other external characters that would serve to distinguish the category I believe to be Leconte's *carinatus* from *calidus*. The only discrepancy I find in Leconte's description is the size given for his male type (5.5 mm.). The size range of males of *calidus* is 4.2 to 4.5 mm.; the female is 4.8 to 5.6 mm. long.

I am not convinced that a single species is represented in the lengthy series I have assigned to this species (see notes under *bispinus*). Females from various parts of the range closely approach *bispinus* in size and general coloration. Males often exhibit an expansion or reduction of the elytral vittae.

Biological notes from labels record specimens from leaf of *Lathyrus japonicus* Willd. ("*Lathyrus maritimus*") and *Lespedeza serecea* Miq. ("*Lespedeza serecia*").

Distribution.—I have assigned 252 specimens to this species. They were collected in the following areas: Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Maryland, Virginia, North Carolina, South Carolina, Alabama, Florida, Tennessee, Ohio, Ontario, Indiana, Michigan, Wisconsin, Mississippi, Kansas, Nebraska, Colorado, Oklahoma, Iowa, South Dakota, and Montana.

Two individuals in the collection bear California as the locality of collection, but it is likely that these labels are in error.

Cryptocephalus castaneus Leconte

Figures 12, 56, 57

Cryptocephalus castaneus Leconte, 1880, p. 200.

Pronotum: Creamy yellow to light orange with four broad, black to red or dark orange, longitudinal vittae, often expanded; median two vittae rarely meeting along midline; each lateral vitta usually arcuate or sinuate, frequently expanded and joining inner vitta; dark markings nearly always sharply delimited. Punctation dual, larger punctures minute to (rarely) rather large and coarse, at side usually with a distinct, shallow depression.

Elytra: Creamy yellow to orange with markings black to dark reddish or orange and variable. Discal markings of each elytron as follows: with a large basal and somewhat smaller anteapical spot, both frequently attaining suture, both often expanded and broadly joining, when expanded sometimes meeting suture, spots sometimes reduced. Spots at side of elytron variable, small, often with two humeral, one anteapical, and two apical spots, sometimes reduced or joined by discal markings. With eight rows of punctures, sixth and seventh rows confused, sometimes also fifth; usually punctures larger and/or sparser than usual, finer to apex; inner and outer rows distinct at apex and nearly always clearly meeting.

Prosternum: Anterior margin in female somewhat produced into a broad or somewhat pointed lobe; anterior margin in male distinctly produced into a downward, pointed lobe.

Length: 3.9 to 5.3 mm.

Discussion.—At one extreme of development of the color pattern, each elytron bears two large discal spots and four smaller spots laterally; often the discal spots are confluent at the suture. At the other extreme, the discal spots of each elytron are broadly confluent, thus forming a broad vitta; sometimes these vittae meet at the suture, usually they do not. Those specimens bearing broad vittae have three or four lateral spots.

Label data record specimens as occurring on strawberry, willows, blackberry, holly, and alfalfa.

Distribution.—Nearly all the 111 specimens in the USNM collection are from California, Arizona, and New Mexico. Two specimens with identical data have Massachusetts as the locality of collection; this is almost certainly in error. Only two specimens represent the Arizona record and a single one the New Mexico record; the other 106 specimens are from California.

Cryptocephalus cerinus cerinus B. E. White

Figures 1, 93

Cryptocephalus cerinus cerinus B. E. White, 1937, p. 111.

Pronotum: Almost uniformly light orange with more or less distinct fine speckling, this absent in two vague basal oblique areas and at lateral and apical margins. Punctation dual, smaller punctures minute and dense, larger punctures very small, not dense.

Elytra: Nearly uniformly light orange, punctures dark, intervals four and six sometimes vaguely darker, humerus more or less clouded. With seven distinct and even rows of punctures and a short series behind humerus, punctures fine and dense, finer to apex as usual; inner and outer rows distinct at apex, not or just meeting.

Prosternum: Anterior margin of prosternum in female produced into a distinct, ventrally directed, pointed lobe.

Length: 5.5 to 6.0 mm.

Discussion.—A single female paratype of this species is in the U.S. National Museum; the data is Lebec, California, VIII-1-36, B. E. White collector, *Chrysothamnus nauseous mohavensis* (*Chrysothamnus nausesous mohavensis* Hall). Another female paratype with the same data as above and from the B. E. White collection has been examined.

C. c. cerinus is very similar to the description and illustration of *C. inconspicuus* Jacoby (1880, p. 56). A specimen determined as the latter by Monros (and which agrees well with its description and illustration) differs from *c. cerinus* in that it is more orange; *c. cerinus* is more creamy yellow. There is a possibility that the two may be synonymous.

One specimen is recorded from greasewood leaves and another from *Covillea tridentata* Vail.

Distribution.—The four specimens examined are from California, Nevada, and Texas.

Cryptocephalus cerinus nevadensis B. E. White

Figure 89

Cryptocephalus cerinus nevadensis B. E. White, 1937, p. 113.

Pronotum: Light orange in most areas with darker orange speckling; with vague reddish markings at center of disk and basally on each side; coloring lightest in two vague oblique basal spots, at sides, and at apex. Punctation dual, larger punctures small, fine, and sparse, smaller punctures minute, moderate in density.

Elytra: Background color light orange, vittae brown to black. Each elytron with three vittae as follows: on second interval, indistinct apically; on fourth interval, sometimes indistinct basally; on sixth interval. With seven rows of even, distinct punctures and a short series behind humerus, punctures distinct and dense, finer to apex as usual; inner and outer rows distinct at apex and nearly or quite meeting.

Prosternum: Anterior margin in male produced ventrally into a pointed lobe, in female produced ventrally into a broad, not distinctly pointed lobe.

Length: 5.0 to 6.3 mm.

Discussion.—I have seen only the holotype and allotype of this subspecies. Though they are superficially very similar to *c. confluentus*, they have the form and symmetry of *c. cerinus*. In the latter and *c.*

nevadensis, the pronotum from the dorsal view is stouter than that of *c. confluentus*.

Distribution.—The types of this subspecies were taken in Nevada; no other specimens are known to me.

Cryptocephalus confluentus confluentus Say

Figures 16, 90, 121

Cryptocephalus confluentus Say, 1824, p. 440.
Cryptocephalus confluens Say, of authors.

Pronotum: Orange to reddish (rarely blackish), usually with light yellowish markings in two basal oblique spots and at lateral and apical margins, usually darkest (sometimes black) basally on each side, light margins variable, often vague. Punctation dual, smaller punctures minute and dense, larger punctures very small, infrequently rather small and coarse.

Elytra: Background color creamy yellow to light orange, vittae brown to black. Each elytron with three dark vittae as follows: on second interval, usually complete, sometimes vague apically; on fourth interval, sometimes vague or interrupted before middle, rarely vague at basal half and apex; on sixth interval, often vague or reduced at base. With seven distinct and even rows of punctures and a short series behind humerus, punctures fine, dense as usual, finer to apex as usual; inner and outer rows distinct at apex and nearly or quite meeting.

Prosternum: Anterior margin in male produced ventrally into a distinct, pointed lobe or spine, in female produced ventrally into a distinct, sometimes pointed lobe.

Length: 4.0 to 5.7 mm.

Discussion.—Haldeman (1849, p. 253) used the spelling *confluens* for this species as have nearly all authors since; I believe, however, this is an unjustified emendation and that the original spelling *confluentus* is correct.

Two specimens from Mexico determined as *C. abruptus* Suffrian are similar to this species. They differ in that the yellowish pronotal markings (two basal spots and the lateral and apical margins) are distinct (not vague as in *c. confluentus*) and the vitta on the second elytral interval is interrupted or incomplete apically (nearly always complete in *c. confluentus*). Also each elytron bears a small, dark subhumeral spot; this is absent in *c. confluentus*.

Tilden (1949, p. 151) recorded this species on *Baccharis pilularis consanguinea* O. Ktze. (Astereae).

Label data provide the following records: *Chrysothamnus*, *Chrysothamnus speciosus* Nutt, and *Gutierrezia lucida* Green.

DISTRIBUTION.—The 65 specimens in the USNM collection are from Utah, California, Arizona, New Mexico, Colorado, Nevada, Wyoming, Nebraska, Kansas, Montana, and Alberta, Canada. Blatchley (1924, p. 53) recorded the species from Florida, but this is probably an error.

***Cryptocephalus confluentus melanoscelus*, new subspecies**

FIGURE 98

General: Body 1.66 to 1.70 times as long as wide; widest behind humeri, somewhat tapering posteriorly; dorsal surfaces shining, without pubescence, most of ventral surface with short, sparse, whitish pubescence, most dense (as usual) on metepisternum.

Head: Creamy yellow, antennal insertions and labrum reddish to dark, vertex usually (in two of three specimens) light orange; front with moderate-sized punctures, moderate in density; clypeus sharply delimited at sides, less so at base, distinctly broadest apically, noticeably concave. Antennae three-fourths length of body in male, or over one-half length of body in female; antennae brown, first segment and apical segments darkest.

Pronotum: Predominantly light orange and speckled with darker orange but with unspeckled cream yellow in two oblique spots at base and at lateral and apical margins. Punctation dual, smaller punctures minute and dense, larger punctures very small, not coarse.

Elytra: Creamy yellow to very light orange, each elytron with black, sharply delimited vittae on intervals two, four, and six; vittae sometimes cloudy or not sharply delimited at bases or apices; first vitta joining suture before apical fourth; second and third vittae narrowly joining before apex. Each elytron with seven rows of fine, even punctures and a short, sometimes confused series behind humerus; punctures distinctly finer apically; inner and outer rows distinct to apex and nearly or quite meeting.

Ventral surface: Prosternum and mesosternum predominantly yellowish; metasternum yellowish at middle, brownish to black at side; metepisternum black. Abdomen mostly clouded brownish, yellowish as follows: at center of first segment; usually at center of segments two and three; entire fifth segment; in lateral spots at side of segments two, three, and four. Legs brownish to black, each lighter or with yellowish on femora above at base and below near apex; tibiae lighter at their bases. Anterior margin of prosternum in male produced ventrally into a distinct, pointed lobe, in female produced ventrally into a shorter, pointed lobe. Fifth abdominal segment faintly depressed at center in male, with a deep, oval depression at center in female. Pygidium yellowish throughout to brownish at base, distinctly punctate, punctures moderate in density and coarseness.

Length: 4.5 to 6.0 mm.

Type data.—This description is from three individuals, all taken at "Searsville L.," California, in June 1927 by D. H. Blake and on *Baccharis pilularis* DC. The locality refers to Searsville Lake in San Mateo County. The male holotype bears type number 69251; it, the allotype, and a female paratype are in the USNM collection.

Discussion.—This subspecies differs from *c. confluentus* primarily in coloration. In *c. melanoscelus*, the legs are predominantly brownish or black, and the pronotum does not bear the reddish or black markings typical of *c. confluentus*. In *c. confluentus*, the legs are yellowish or reddish (sometimes with a little brownish evident), and the pronotum is generally reddish and often nearly black at the sides. The male genitalia of *c. melanoscelus* are essentially identical to those of *c. confluentus*.

Cryptocephalus contextus, new species

Figure 102

General: Body 1.8 times as long as wide; dorsal surfaces rather shiny, elytra a little less shiny than pronotum; dorsum without pubescence, most of ventral surface with short, sparse pubescence.

Head: Front and clypeus ivory yellow, an inverted V from vertex to antennal insertions, lateral margin of clypeus and labrum orange; front and clypeus with rather small, sparse punctures; clypeus broad, apex somewhat wider than base. Antennae two-thirds length of body in female, brown throughout.

Pronotum: Orange with ivory yellow as follows (light markings not sharply delimited); in two oblique basal spots; at lateral margin (this narrower posteriorly, abruptly wider anteriorly); narrowly at anterior margin. Orange areas speckled with minute darker spots, densest laterally at base, nearly absent medially at base except on median line, median line anteriorly without spots. Punctation dual, small punctures minute, larger punctures quite small.

Elytra: Background color ivory yellow, dark markings brown. Dark markings of each elytron interconnected, confined largely to area bounded by suture to sixth stria at side and from basal limit of punctures to apical limit of third to sixth intervals; markings not attaining base, lateral margin, or apex; with yellow at base near scutellum, at middle of side, in a common spot on second and third intervals, and in apical spots on third, fourth, and fifth intervals. Each elytron with seven rows of fine, rather dense punctures and a series behind humerus, finer apically as usual; fifth row confused before apex, sixth row irregular behind humerus; inner and outer rows distinct at apex, more or less clearly meeting.

Ventral surface: Ventral surface and legs orange; with ivory yellow on prosternum, mesosternum (plus side pieces), basal median part of first abdominal segment, and at sides of first to fifth abdominal segments; ivory yellow broad on fifth segment. Anterior margin of prosternum in female broadly, not strongly, lobed. Pygidium ivory yellow, median line and base narrowly brown, surface rather coarsely punctate. Fifth abdominal segment in female with a large, oval, deep depression at center.

Length: 4.2 mm.

Type data.—This species is described from a single female specimen (USNM type number 69245) with the data, "Grand Canyon, Arizona, June '27, D. H. Blake."

Discussion.—*Cryptocephalus contextus* is similar to *cowaniae*; the two are separable on the basis of the dark elytral markings. In *cowaniae*, these attain the sides of the elytra just behind the middle and before the apex; in *contextus*, they do not attain the sides of the elytra. The specific name (meaning connected) refers to the fact that the dark elytral markings are interconnected.

C. contextus is also similar to the Central American species *patheticus* Suffrian. The basic elytral pattern is the same; however, the body size and extent of the dark markings separate the two. *C. contextus* is 4.2 mm. long, and two specimens of *patheticus* in the USNM collection are 2.8 mm. and 3.0 mm. long. In the two specimens of *patheticus*, the dark elytral markings attain the sides of the elytra; in the single specimen of *contextus*, they do not.

In addition, this species is quite similar to the illustration and description of *C. decemplagiatus* Jacoby in the Biologia Centrali-Americana (1889, p. 111). I have seen no individuals of the *decemplagiatus* so have been unable to make a direct comparison. One apparent difference is that the pronotum of *decemplagiatus* is described as predominantly brown; that of *contextus* is orange.

Cryptocephalus cowaniae Schaeffer

Figures 83, 124

Cryptocephalus cowaniae Schaeffer, 1934, p. 462.

Pronotum: Dark red or (usually) brown to black, light markings creamy yellow to orange. Light markings as follows: at base on each side in a rectangular spot; at apex in a larger, roughly square spot; at apical margin, broadest at center; in two oblique basal spots, often reduced to simple spots, rarely vague or absent, markings rather sharply delimited. Punctation dual, larger punctures minute to small.

Elytra: Dark red or (usually) brown to black, light markings creamy yellow to orange. Light markings as follows: an elongate spot

at base of scutellar and first intervals; conjoined spots at bases of third, fourth, and fifth intervals meeting yellow lateral margin, latter spots rarely reduced or absent; an oblique spot at about middle of second and third intervals, often reduced or vague, rarely absent; lateral margin at base to about middle apically joining an oblique lateral spot; two anteapical spots, often reduced or joined; one apical spot sometimes reduced. With eight rows of punctures, fifth shortened, usually sixth and seventh confused (or only sixth), sixth interrupted or reduced at middle; inner and outer rows distinct at apex, usually clearly meeting.

Prosternum: Anterior margin in female evenly arcuate, not produced; anterior margin in male somewhat produced into a broad lobe.

Length: 3.7 to 4.8 mm.

Discussion.—Schaeffer (1933, p. 462) described erect spinelike processes at the apex of the prosternum in the male. These are actually at the base of the prosternum and appear to be ventral extensions of the paired processes normally present in members of this genus.

The male holotype bears Schaeffer's identification label and is thereon designated as type; it bears USNM type number 69090. Fifteen paratypes (three males, twelve females) complete the type series; these are all in the U.S. National Museum. All were taken at Williams, Arizona, during July by Schwarz and Barber, and evidently in the year 1901 (some bear the year of collection, but some do not, and included among the latter is the holotype). The days of collection are given for all and are the first (the holotype and one female paratype), the 14th (one male paratype), the 16th (one male and five female paratypes), the 17th (one male and four female paratypes), the 18th (one female paratype), and the 28th (one female paratype).

Schaeffer (1934, p. 462) records the species as being taken on *Cowania stansburiana* Tarr.

Distribution.—In addition to the 16 types, three other individuals have been examined, all from Arizona.

Cryptocephalus cribripennis Leconte

Figure 64

Cryptocephalus cribripennis Leconte, 1880, p. 200.

Pronotum: Light red to (usually) dark reddish, light markings creamy yellow to orange. Light markings as follows: in two joining, elongate, oblique spots at base; entire lateral margin (distinctly narrowed medially); at apical margin; markings rather sharply delimited. Punctation usually not dual, smaller punctures absent to very sparse, larger punctures minute to small; with a distinct, shallow impression at each side.

Elytra: Creamy yellow to orange, punctures and markings red to dark reddish. Dark markings as follows: an elongate spot at base of first interval (this often joins suture at its apex); elongate spots at base, middle, and apex of third interval; a humeral spot; two spots behind humerus, one obliquely above and one obliquely below humerus; a submedian spot; a spot at apex of seventh interval; markings usually consistent, sharply delimited, sometimes expanded or reduced. Punctures quite large, more or less irregular, sparser than usual, generally forming eight evident rows, rows often obscure; rows six and seven confused and much reduced; punctures finer apically; inner and outer rows distinct at apex, clearly meeting.

Prosternum: Anterior margin in female somewhat or vaguely produced into a lobe, usually pointed; anterior margin in male distinctly produced into a pointed lobe.

Length: 4.8 to 6.2 mm.

Discussion.—There is a possibility that *cribripennis* is synonymous with *irroratus* Suffrian (1852b, p. 32). I have examined the description of *irroratus* but have not been able to assign the name with certainty to specimens in the Central American series of the USNM collection. Among specimens in this collection determined as *C. irroratus*, I find four distinct species, one of which matches *cribripennis*. The other three have the dark elytral markings joining to form transverse bands; I think it likely that *irroratus* applies to one of the last three, but to which one I cannot determine.

Collection data refer to specimens as taken on orange trees, on cotton, on marsh willow, and on black-eyed peas.

Distribution.—The 64 specimens examined are from southern Texas.

Cryptocephalus cuneatus Fall

Figures 11, 51

Cryptocephalus cuneatus Fall, 1932, p. 24.

Pronotum: Creamy yellow to very light orange with three broad, orange to (sometimes) dark red longitudinal vittae, one median, two lateral, these sometimes expanded and joining apically, markings not sharply delimited. Punctures dual, larger punctures minute to small.

Elytra: Each elytron creamy yellow to very light orange with black markings, disk sometimes clouded with reddish. Suture more or less broadly margined with black, a black mark from humerus to apex of seventh interval. With eight rows of punctures, sixth and sometimes fifth rows confused, lateral intervals distinctly convex, punctures as large and dense as usual, punctures finer apically; inner and outer rows distinct at apex and clearly meeting.

Prosternum: Anterior margin not produced, evenly arcuate in both sexes.

Length: 4.0 to 5.1 mm.

Distribution.—All 15 specimens examined are from Florida. Fall's single male type specimen was from Georgia.

Cryptocephalus cupressi Schaeffer

Figures 55, 122

Cryptocephalus cupressi Schaeffer, 1933, p. 324.

Pronotum: Creamy yellow with four dark reddish to nearly black, longitudinal, sharply delimited vittae, these attaining base but not apex; median two nearly parallel-sided, somewhat widest at apical third, nearly to quite touching at base; lateral two triangular, widest apically, narrowest at base. Punctation dual or not, small punctures (when present) extremely sparse, larger punctures very large, coarse but smaller and less coarse near margins.

Elytra: Each elytron creamy yellow with sharply delimited dark reddish markings. Dark markings as follows: large diagonal spot from base of fourth interval to apex of sutural stria, broadly attaining suture, not attaining base or scutellum; a large spot centered just behind humerus, not attaining base or side; two paired postmedian, medium-sized spots, first centered at apical third of fourth interval, second centered at about apical third of seventh stria (latter two sometimes narrowly joined); two paired, apical spots, one centered before apex of third stria, other centered before apex of seventh stria. With eight rows of punctures, sixth and seventh rows confused, punctures as large as but generally sparser than usual, those of disk more strongly impressed than usual, much finer to apex; inner and outer rows distinct at apex, usually clearly meeting.

Prosternum: Anterior margin in both sexes distinctly produced downward into a blunt or rather pointed lobe, more produced in male.

Length: 4.7 to 5.7 mm.

Discussion.—Schaeffer's four cotypes are in the USNM, three are females, one is a male. The single male is hereby designated lectotype and is so labeled; it bears USNM type number 69091. The data on the lectotype follows: "N. Orleans, 1.2 La., ex pupa V." A cotype bears essentially the same data as above but emerged on "IV." One cotype bears the following: "New Orleans, La., larvae on cypress XII.29.1931, adult pupae IV.6.1932". The other cotype bears: "New Orleans, I.2.1932, on cypress, ex pupa IV.1932, G. P. Engelhardt Coll."

Distribution.—The four type specimens from Louisiana are all that have been examined.

Cryptocephalus defectus Leconte

FIGURE 65

Cryptocephalus defectus Leconte, 1880, p. 201.
Cryptocephalus nigrovittatus Jacoby, 1880, p. 44. [New synonymy.]

Pronotum: Light orange throughout, vaguely darker near apex and laterally on each side; punctation extremely sparse and minute, not distinctly dual.

Elytra: Light orange with brown markings. Each elytron with dark markings as follows: on second stria at base, at basal half of fourth interval, on humerus, at apical third of sixth interval, at apex of sixth interval, and at middle of eighth stria. With seven rows of punctures and a short series behind humerus, no striae confused; fourth interval distinctly narrowed at nearly basal half, all intervals distinctly convex; punctures finer, as dense as usual, striae finer to apex; inner and outer rows distinct at apex and usually clearly meeting.

Prosternum: Anterior margin in female broadly, feebly lobed; male not seen.

Length: 3.2 to 3.3 mm.

DISCUSSION.—Schaeffer (1934, p. 457) listed as synonyms of *luteolus* Newman both *defectus* and *sanfordi* Blatchley (=*sanfordensis* Blatchley, see Clavareau, 1913, p. 182). He stated that he had seen the type of *defectus* and had received notes on the type of *luteolus;* however, the species I interpret as *luteolus* (=*sanfordi*) has a reddish thorax; that of *defectus* is described as yellow and not varied. In the USNM collection there is a single individual from Florida that agrees with the descriptions of *sanfordi* and *luteolus* and that is clearly distinct from two individuals from Texas which agree with the description of *defectus*. When a color sketch of one of the latter individuals was sent to the Museum of Comparative Zoology, Dr. Evans informed me that the type of *defectus* agreed with it. On this basis, I remove *defectus* from synonymy with *luteolus*.

By its description and illustration, *nigrovittatus* Jacoby (October 1880, p. 44) is nearly identical with *defectus* Leconte (July 1880, p. 201). The only difference is the extent of the black stripe on the second interval of the elytra of *nigrovittatus;* it is described and illustrated as extending past the middle of the interval. In a series of individuals from Central America (Finca, Panama; Yepocapa, Guatemala; and Almolonga, Mexico) that agree with the description of *nigrovittatus*, however, this vitta is variable in its development. In nine it is as described in the original description, in one it is nearly absent, and in another it is interrupted in the middle. I find no other characters that

would reliably serve to distinguish *defectus* and *nigrovittatus*, so I have united the two.

DISTRIBUTION.—Both specimens examined are from Texas.

Cryptocephalus disruptus, new species

FIGURES 100, 125

General: Body 1.73 times as long as wide; dorsal surface moderately shining and without pubescence, most of ventral surface with short, sparse pubescence.

Head: Dull orange, a darker spot on vertex; antennal insertions and apical margin of clypeus reddish. Front roughly punctate, punctures small to moderate, dense at middle. Clypeus with basal suture obsolete, moderately wider apically than at base. Antennae of male about two-thirds length of body, dull orange, apical half a little darker.

Pronotum: With dark markings on a dull orange background. Markings dark reddish, not sharply delimited, consisting of four longitudinal, subparallel stripes, separated throughout, inner two widest at middle, leaving a median light stripe, somewhat outwardly arcuate; outer dark stripes broader than inner, broadest behind middle, rather narrowed anteriorly; in middle at each side with a small, dark red spot. Punctation dual, surface irregularly, finely wrinkled, smaller punctures larger than usual, distinct; larger punctures small, more or less coarse.

Elytra: Background color creamy yellow; dark markings red, punctures black. Each elytron with dark markings as follows: a transverse undulate postbasal band from suture to humerus; a small subhumeral spot; a moderate-sized postmedian spot from suture to fifth stria, lateral to postmedian spot a rather small spot centered on seventh stria and touching lateral margin; two small spots near apex, one centered just before apex of fourth interval, other centered before apex of sixth interval. Punctures primarily confined to dark markings, large and distinctly arranged in rows only on dark markings, much smaller, very sparse on light areas; punctures on dark markings forming seven disconnected rows, these punctures rather smaller apically; outer row of punctures distinct at apex, inner row obsolete at apex.

Ventral surface: Ventral surface, legs, and pygidium dull orange with reddish evident; prosternum, front coxae, mesosternum, mesepimeron, and first abdominal segment at base with dull yellow, each femur ventrally before apex with a yellowish spot. Fifth abdominal segment of male at center feebly depressed. Anterior margin of prosternum in male evenly arcuate, not produced.

Length: 4.25 mm.

TYPE DATA.—The single male individual from which this species is described (USNM type number 69246) bears only the datum Colorado.

DISCUSSION.—This species is most similar to *bivius* and is readily distinguished from it. In *bivius*, the rows of punctures are continuous and not interrupted by the light areas; in *disruptus*, the rows are obsolete or absent in the light areas. Also *bivius* ranges in length from 4.3 to 6.4 mm.; the one individual of *disruptus* is 4.25 mm. long. The specific name *disruptus* refers to the disconnected rows of punctures of the elytra.

Cryptocephalus dorsatus, new species

FIGURES 2, 99, 126

General: Body 1.7 times as long as wide; dorsal surface shining, without pubescense, most of ventral surface with short, sparse, whitish pubescence.

Head: Dull orange, front with moderate-sized punctures; clypeus not sharply delimited, short, distinctly broadest apically, with fine, sparse punctures. Antennae of male about two-thirds length of body, in female about one-half length of body, first five segments dull orange, apical six segments dark brown.

Pronotum: Predominantly dull orange, with vague lighter or apparently transparent areas at base, apex, and sides. Punctation dual, smaller punctures minute and rather dense, larger punctures small, not dense.

Elytra: Dull creamy yellow to light orange; humerus dark brown to black; punctures dark. Each elytron with seven rows of moderate-sized, fairly even punctures and one or two punctures behind humerus, punctures rather close, smaller to apex; inner and outer rows distinct at apex, nearly meeting or meeting. Intervals not or only slightly convex.

Ventral surface: Ventral surfaces and legs dull orange, metasternum (especially at side) darker than remainder. Male with anterior margin of prosternum broadly produced ventrally into a V-shaped lobe, appearing spinelike in lateral view; female with anterior margin of prosternum produced ventrally, not as broad or pointed as that of male. Fifth abdominal segment at center with a broad, deep, oval pit in female, or faintly depressed in male. Pygidium dull orange, with rather dense, moderate-sized punctures.

Length: 4.4 to 5.0 mm.

TYPE DATA.—Described from one male and one female taken at Alpine, Texas, on August 1, 1949. The female bears the following data: "sweeping *Erigeron* sp. and *Gutierrezia microcephala*, Alpine, Tx.

1–VIII–49, J. L. Ward." The male holotype is in the CAS collection; the allotype is in the USNM collection.

Discussion.—This species is most similar to *c. cerinus*, but differs in color. In *dorsatus*, the pronotum is dull orange and the elytra are creamy yellow to light orange; in *c. cerinus*, the dorsal surface is light orange throughout.

Cryptocephalus duryi Schaeffer

Figures 14, 54, 120

Cryptocephalus duryi Schaeffer, 1906, p. 230.

Pronotum: Creamy yellow to light orange, with four rather narrow, red to dark red, subparallel, longitudinal vittae, these attaining base, nearly attaining apex, sharply delimited, never touching; sculpture dual and coarse, larger punctures rather large, smaller punctures larger than usual; pronotum in profile more declivous than usual.

Elytra: Creamy yellow to dull light orange, humerus and punctures dark red, punctures large, confused, rows evident only at sides and apex, numerous punctures transversely joined by red, especially those on disk; inner and outer rows of punctures distinct at apex and clearly meeting.

Prosternum: Anterior margin in male somewhat produced anteriorly into a rather pointed lobe, anterior margin in female not or feebly lobed.

Length: 4.5 to 5.6 mm.

Discussion.—The female holotype and single specimen from which the species was described is USNM type number 42306. The printed label data are as follows: "Brownsville, Tex. Apr. 12–May 20," written on the label in pencil is the following: "5/5 03."

One specimen was taken on a mimosa leaf.

Distribution.—The seven specimens examined are all from southern Texas.

Cryptocephalus egregius Schaeffer

Figures 17, 60

Cryptocephalus egregius Schaeffer, 1934, p. 459.

Pronotum: Dull creamy yellow to nearly orange, with black, sharply delimited markings. Dark markings as follows: a broad, median, longitudinal spot from base to apex, midline with narrow, disconnected spots of yellow; each side of median spot with oval to triangular, medium-sized spots, usually narrowly connected with median spot; at each side usually with a very tiny black spot. Surface sculpture dual or not, smaller punctures usually absent, larger punctures minute to absent.

Elytra: Dull creamy yellow to nearly orange with black markings sharply delimited. Each elytron with dark markings as follows: three medium-sized spots, one centered before base of second stria, one centered before apex of second interval, one centered behind middle of sixth stria (these spots may be expanded and largely confluent); with six small spots, one on suture before apex of sutural stria, one on humerus, two behind humerus (one diagonally above, one diagonally behind), one at apex of fourth interval, one at apex of seventh interval. With eight rows of punctures, usually fifth, sixth, and seventh rows confused, sometimes only sixth, punctures as large, a little sparser than usual, much finer apically; inner and outer rows distinct at apex and usually clearly meeting.

Prosternum: Anterior margin in female produced ventrally into a somewhat pointed lobe; male not seen.

Length: 6.0 to 6.7 mm.

Discussion.—The female holotype from Fort Valley, Georgia, collected by Scott and Fiske is USNM type number 69092. The single female paratype is also in the U.S. National Museum; it was taken at Calvert, Texas, on "IV.12.07" by C. R. Jones. These two specimens represent the type series.

Distribution.—Only five individuals have been seen, they are from Texas, Arkansas, Louisiana, Georgia, and New Jersey.

Cryptocephalus fulguratus Leconte

Figure 67

Cryptocephalus fulguratus Leconte, 1880, p. 203.

Pronotum: Dull orange to red, margins usually yellow or at least lighter, not sharply delimited; punctation usually dual, smaller punctures very sparse to nearly absent, larger punctures minute.

Elytra: Light creamy yellow to orange, striae and dark markings red to (usually) dark red. Dark markings as follows: on base of second interval curving to apex of sutural stria; on apex of second stria; at base, middle, and apex of fourth stria; behind base, behind middle, and on apex of sixth stria; on humerus; behind base at middle of seventh stria; above markings reduced to (rarely) nearly absent or (more often) transversely joined and forming three undulating bands. With seven rows of punctures and a short series behind humerus, sixth stria interrupted and joining fifth, latter sometimes also interrupted at junction with sixth; punctures as large, dense as usual, finer apically, intervals rather to quite convex; inner and outer rows distinct at apex and clearly meeting.

Prosternum: Anterior margin in male somewhat produced into a broad lobe, anterior margin in female feebly produced.

Length: 3.8 to 5.0 mm.

Discussion.—This species is similar to but evidently distinct from a single specimen from the Monros collection determined as *C. austerus* Suffrian taken at Orizaba, Mexico. In the latter individual, the elytral surface is rather depressed by two narrow, transverse, dark bands, and the striae are somewhat distorted. This condition does not occur in *fulguratus*. Two additional specimens in the USNM collection (one from Mexico, the other from Guatemala) determined as *C. rimosus* Suffrian differ from *fulguratus* by the above characters and apparently are not distinguishable from *austerus*.

A single individual is recorded from oak.

Two of the specimens on hand (both from Sabinal, Texas) are uniformly light orange above with very faint indications of the dark elytral markings. These markings are more or less distinct in all the other specimens.

Distribution.—The 130 specimens examined are from Texas, Arkansas, and Kansas.

Cryptocephalus gibbicollis gibbicollis Haldeman

Figure 79

Cryptocephalus gibbicollis Haldeman, 1849, p. 252.

Pronotum: Orange to red, nearly always with two vague oblique, yellowish spots at base; lateral and apical margins more or less yellowish; yellowish markings often reduced or expanded. Surface with dual punctation, larger punctures minute to small. Pronotum in profile rather to distinctly more gibbous than usual.

Elytra: Creamy yellow to very light orange with black markings. Each elytron with two complete, sharply delimited, black (rarely very dark reddish) vittae as follows: from base of second, third, and fourth intervals to apex of second interval; from humerus to apex of seventh to fourth intervals. With eight rows of punctures, usually sixth and seventh rows confused, sometimes only sixth, fifth row often abbreviated; punctures as usual in size and density, finer apically; inner and outer rows usually clearly meeting at apex; epipleuron black throughout.

Prosternum: Anterior margin in both sexes somewhat produced into a broad lobe.

Length: 5.2 to 7.1 mm.

Discussion.—Three individuals from Ashland, Massachusetts, have the vittae much narrowed but still complete; they are thus nearly intermediate between *g. gibbicollis* and *g. decrescens*.

Label data provide the record "on *Kalmia angustifolia*."

Distribution.—The 91 specimens on hand are from Maine, New Hampshire, Rhode Island, Connecticut, Massachusetts, New York,

Pennsylvania, New Jersey, Maryland, Virginia, Alabama, and Louisiana.

Cryptocephalus gibbicollis decrescens, new subspecies

FIGURES 101, 123

Head: Reddish orange, usually with vague yellow adjacent to eyes, antennal segments one to five orange, terminal six brown to black.

Pronotum: Disk deep orange to reddish. Vague yellowish markings present as follows: in two more or less indistinct basal spots; a narrow band at lateral margin; a narrow to broad band at apical margin, margins narrowly black. Disk produced as in *g. gibbicollis*.

Elytra: Background color creamy yellow to light orange; all margins narrowly black; dark markings black, frequently with brown or reddish borders, variable in development, on one extreme with only humerus black, on other with incomplete vitta from base of stria two to before apex of interval two (often with base of interval three and stria three clouded), and with incomplete vitta from humerus to just past middle of interval seven, often also blackish at apex of fourth interval. Epipleuron with inner and outer margins brown to black, medially brown to yellowish. Rows of punctures as in *g. gibbicollis*.

Ventral surface: Form as in *g. gibbicollis;* ventral surfaces, pygidium, and legs nearly uniformly reddish orange, pygidium often with yellowish at sides, tarsi often more or less brownish.

Length: 5.0 to 7.0 mm.

TYPE DATA.—Described from nine individuals with the following data: "Sherborn, Massachusetts, VII–23–1933, C. A. Frost" (male holotype, USNM type number 69249, and allotype); "USA, Massachusetts, Sherborn, 29–VI–1934, Coll. Frost, Monros Collection" (two males, two female paratypes); "C. A. Frost, Sherborn, Massachusetts, VII–23–33, sweeping *Kalmia*" (one female paratype); one female paratype from Milford M., Sept. 7–94, collection F. Knab" (the M. in the previous data probably refers to Massachusetts); "Jacksonville, Florida, collection Ashmead" (one female paratype). All types are in the U.S. National Museum.

DISCUSSION.—This subspecies is readily distinguished from *g. gibbicollis* by the color pattern. In *g. gibbicollis*, the inner vitta of each elytron encompasses three intervals at its base, and the outer vitta is complete from the humerus to the apex. In *g. decrescens*, the inner vitta is obsolete at the base or covers a single interval, and the outer vitta is never complete, at most it extends to just past the middle of the elytra. The subspecific name (meaning to diminish or lessen) refers to the dark markings of the elytra, which are much reduced from the condition in *g. gibbicollis*. The internal structures of the male

genitalia of these subspecies are essentially the same, but in *g. gibbicollis* the median lobe is noticeably broader apically.

The male holotype illustrated (fig. 101) is about midway between the extremes in the development of the dark elytral markings.

Cryptocephalus guttulatellus Schaeffer

FIGURE 52

Cryptocephalus guttulatellus Schaeffer, 1920, p. 327.
Cryptocephalus quatuordecimpustulatus Schaeffer, 1904, p. 226 [not Suffrian].

Pronotum: Dull creamy yellow, disk (except broad basal area) usually speckled, sometimes clouded with reddish or orange; punctures of one size, small, sparse.

Elytra: Background dull orange to dull reddish, each elytron with seven creamy yellow to very light orange spots, more or less oval, subequal, generally separated by a little less than half their diameters (rarely some touching). Spots centered as follows: one before base of scutellar stria, one at base of fifth interval, one at middle of sixth stria, one at about middle of second stria, one before apex of third stria, one before apex of seventh interval, and one at elytral apex. With seven rows of punctures, fifth and sixth rows confused, often both interrupted and joining at about middle of elytron; punctures varying in size, generally sparser than usual; finer apically; inner and outer rows distinct at apex, not joining.

Prosternum: Anterior margin somewhat broadly produced in both sexes.

Length: 2.6 to 3.0 mm.

DISCUSSION.—A series of specimens from Central America determined as *C. ocellatus* Suffrian (a synonym of *subtilis* Harold, 1872, p. 254) appears undistinguishable from *guttulatellus*, but I have been unable to confirm that the series is correctly determined.

The Central American species *C. tesseratus* Chevrolat (1834, p. 85) is similar in color and pattern to *guttulatellus* but is larger; it varies in length from 4.0 to 5.0 mm.

Nine cotypes are in the U.S. National Museum and these bear type number 42412. The specimen I hereby designate as the lectotype is a male and bears Schaeffer's determination label; the data follows: "Esprza Rch Brownsville Tex. VIII/" Three cotypes (one male, one female, and one with the apex of the abdomen eaten by a dermestid, but evidently a female by its size) bear the same data as the type. Two cotypes bear the data "Esper Rch Brownsville Tex," one, a male, was taken in "VII," the other, a female, was taken in "VI." Three additional cotypes bear the following: "Brownsville Tex., VI 2" (a female) "Esp. Ranch Brownsville Tex., V.27" (a female); and "St. Thomas Brownsville Tex VIII 28" (a male).

One specimen was taken on *Celtis*.

DISTRIBUTION.—All 33 specimens seen (including the types) were taken in southern Texas.

Cryptocephalus guttulatus Olivier

FIGURES 53, 130

Cryptocephalus guttulatus Olivier, 1808, p. 815.
Cryptocephalus lautus Newman, 1840, p. 250.

Pronotum: Light orange to reddish, basal angle yellowish, often with basal oblique spots, lateral and apical margins yellowish or lighter. Surface impunctate to very finely, sparsely punctured, punctures not dual.

Elytra: Background black to red or dark orange, each elytron with eight nearly subequal, usually oval, creamy yellow to dull orange spots. Spots as follows: one centered at base of scutellar stria, one centered at base of fifth interval, one centered at base of last stria, one centered at middle of third interval, one centered before middle of seventh stria, one centered before apex of third stria, one centered before apex of eighth interval, and one centered at junction of inner and outer stria. Surface sometimes finely, transversely wrinkled. With eight rows of punctures, sixth confused and much reduced, seventh usually interrupted or somewhat confused; punctures as large, dense as usual, finer apically; inner and outer rows distinct at apex, usually nearly or quite meeting.

Prosternum: Anterior margin in male produced into a distinct, ventrally directed lobe; anterior margin in female with a distinct, somewhat less produced lobe.

Length: 3.9 to 6.0 mm.

DISCUSSION.—The Central American species *tesseratus* Chevrolat (1834, p. 85) may be synonymous with *guttulatus*. The only differences I find between the USNM series of these two are that the background color of *guttulatus* is often black, in *tesseratus* it is dark reddish. The inadequacy of the *tesseratus* series (but six specimens, some in poor condition) does not allow a reliable conclusion to be drawn.

Another possible synonym of *guttulatus* is *testudineus* Jacoby (1889, p. 105). By its description and a specimen in the USNM collection from Guatemala City, it seems identical. I have not seen an example of *rhombeus* Suffrian (described as similar to this group of species by Suffrian), so I will not make name changes at this time.

Specimens in the collection have been collected on cotton and on okra.

Douglass (1929, p. 8) recorded this species from honey locust.

Distribution.—The 146 specimens in the collection were collected in Massachusetts, New York, Maryland, New Jersey, Pennsylvania, Virginia, South Carolina, Georgia, Tennessee, Florida, West Virginia, Indiana, Wisconsin, Arkansas, Kansas, Texas, and Colorado.

Cryptocephalus implacidus, new species

Figures 3, 104

General: Body 1.65 to 1.75 times as long as wide; dorsal surface somewhat shining, without pubescence, most of ventral surface with short, sparse, whitish pubescence.

Head: Dull orange to light dull orange, vertex and antennal insertions reddish or darker; front with large, coarse, dense punctures; clypeus sharply delimited at sides, distinctly broadest at apex; antennae of female a little over half as long as body, dull orange throughout to brownish apically.

Pronotum: Dull light orange to dull reddish orange, large punctures irregularly darker or reddish; punctation dual, smaller punctures minute, moderate in density, larger punctures large, dense, coarse.

Elytra: Dull light orange to dull reddish orange with vague indications of two dark, transverse bands, one behind middle, one before apex. Each elytron with nine rows of fairly large, close punctures, sometimes occasional punctures out of alignment or rows slightly irregular; sixth and seventh rows even throughout to somewhat confused; punctures slightly smaller at apex; inner and outer rows confused at apex and not joining, confused punctures at apex obliterating intervals.

Ventral surface: Ventral surface and appendages dull reddish, generally with femora, mesosternum, and base of abdomen dull orange. Anterior margin of prosternum in female somewhat produced ventrally into a rather broad lobe. Fifth abdominal segment at center with a broad, deep pit in female. Pygidium dull orange to dull reddish, densely, coarsely punctate.

Length: 4.6 to 5.1 mm.

Type data.—The above description is from three individuals, all females. The holotype (USNM type number 69250) was taken at Mansura, Louisiana, on March 26, 1910, by Cush (sic) and Hood. One paratype was collected at Hockley, Texas, on June 16, 1891, by F. W. Thurow (in USNM). The final paratype is from Leon County, Texas and was taken on May 18, 1948, by D. J. Knull (in OSU).

Discussion.—This species is quite similar to *ochraceus*. In the latter species, elytral striae six and seven are largely to entirely confused, and specimens are known only from Florida. In *implacidus*, elytral striae six and seven are even to somewhat confused, and specimens

are known only from Texas and Louisiana. The specific name refers to the coarse punctation of the pronotum.

Cryptocephalus incertus Olivier

FIGURE 70

Cryptocephalus incertus Olivier, 1808, p. 814.
Cryptocephalus lineolatus Haldeman, 1849, p. 249.

Pronotum: Orange to red or very dark reddish and usually with two oblique basal spots; lateral and apical margins yellowish to light orange, not sharply delimited. Punctation dual, larger punctures small to rather large, usually not distinctly impressed.

Elytra: Creamy yellow to orange, striae and vittae dark orange to red or dark red. Each elytron with a vague to distinct (usually not sharply delimited) longitudinal vitta, usually extending from base of third and fourth intervals (often diagonally joining suture and lateral margin) sometimes reduced to a vitta at basal half of fourth interval and apical half of fifth interval or expanded to cloud most of elytron with reddish. With seven rows of punctures and a series behind humerus, fifth stria sometimes disconnected before apex; punctures as large, dense as usual, not to somewhat finer apically; inner and outer rows of punctures at apex confused and not meeting.

Prosternum: Male with anterior margin broadly, somewhat produced; female with anterior margin not or faintly produced.

Length: 2.7 to 4.0 mm.

DISCUSSION.—Collection notes record specimens from cucumber and cranberry.

DISTRIBUTION.—A total of 84 specimens have been examined. One of these is labeled as from Texas, but this may be in error; the other specimens are from New Hampshire, New York, New Jersey, Massachusetts, Maryland, North Carolina, Alabama, Georgia, and Florida.

Cryptocephalus insertus Haldeman

FIGURE 74

Cryptocephalus insertus Haldeman, 1849, p. 252.
Cryptocephalus ellipsoidalis Casey, 1884, p. 66.

Pronotum: Orange to red or brown and usually with two oblique, yellowish basal spots, also lateral and apical margins yellowish; yellowish markings, when present, not sharply delimited. Punctation usually dual, smaller punctures present or absent, larger punctures minute to small and rather coarse.

Elytra: Creamy yellow to dull orange, with black to brown markings. Each elytron with dark markings as follows: from base of second, third, and fourth intervals to apex of second interval, rarely reduced

or incomplete, often expanded (especially in male); usually with three, sometimes two lateral spots, spaced from humerus to apex of seventh to fourth vittae, sometimes these enlarged and joining inner, enlarged vitta (especially in male), rarely complete, rarely reduced to just small humeral and apical spots. With eight rows of punctures, sixth row slightly to distinctly confused, seventh row usually moderately confused; punctures as large and dense as usual to finer than usual, nearly always very distinctly finer to apex; inner and outer rows of punctures distinct at apex, usually clearly meeting.

Prosternum: Anterior margin in both sexes evenly arcuate, feebly produced in some males.

Length: 3.8 to 5.8 mm.

Discussion.—I have examined the male type of *ellipsoidalis* Casey (type number 49222 in USNM) and confirmed that it is identical to *insertus*.

Collection data refer to specimens taken from *Desmodium* and "*Comptonia asplenifolia*," now *Comptonia peregrina* (L.).

Distribution.—The USNM collection totals 177 individuals from New Hampshire, Connecticut, Massachusetts, New York, New Jersey, Pennsylvania, Florida, Louisiana, Kansas, South Dakota, and Colorado.

Cryptocephalus lateritius Newman

Figure 35

Cryptocephalus lateritius Newman, 1841, p. 78.

Pronotum: Creamy yellow to orange, punctures red to dark red, red sometimes coalescing, infrequently leaving but tiny patches of yellow. Punctation dual, larger punctures large and coarse to very coarse.

Elytra: Creamy yellow to orange, each elytron with three vague to quite vague, transverse, undulating red to dark red bands; punctures red, larger and denser than usual, usually forming five discal rows, more or less regular (often rather confused or double) and two lateral rows, these rather confused to almost completely confused throughout; punctures not or somewhat smaller to apex; inner and outer rows at apex not evident, entirely confused.

Prosternum: Anterior margin in male produced into a rather broad lobe, anterior margin in female not produced.

Length: 3.7 to 4.5 mm.

Discussion.—There is considerable variation in the tendency of the elytral punctures to align in rows. At one extreme, the punctures are almost entirely confused and but one or two rows are faintly indicated. At the other extreme (these specimens are from the northern part of the range), the scutellar, first five, and last two rows are evident

though irregular. The pronotal punctures of a single specimen from Georgia are much denser than usual and show a tendency toward becoming longitudinally elongate; this is similar to but not nearly as pronounced as the condition of the sculpture in *schreibersii*. In the Georgia specimen, the elytral punctures of the disk tend to form double rows. This tendency is less pronounced or absent on the other seven specimens on hand.

Collection data provide the records, skeletonizing leaves of *Quercus virginiana* Mill. and *Prunus angustifolia* Marsh.

Distribution.—The eight specimens in the USNM collection are from Florida, Georgia, and North Carolina.

Cryptocephalus leucomelas leucomelas Suffrian

Figures 15, 58, 127

Cryptocephalus leucomelas Suffrian, 1852, p. 36.

Pronotum: Creamy yellow to orange, with four red to brown or black, longitudinal, sharply delimited vittae from base to apex, sometimes narrowly meeting at apex or base. Punctation dual, smaller punctures sometimes sparse, larger punctures small to moderate in size, sometimes coarse. Profile more declivous than usual.

Elytra: Creamy yellow to orange with red to brown or black markings. Each elytron with dark markings as follows: a transverse band at basal third, broadly meeting suture before apex of scutellar stria, often expanded to humerus and nearly to base; a transverse band just behind middle from about fifth stria to suture; humeral and subhumeral spots (latter may join basal transverse marking); a lateral spot at about apical third; two apical spots; markings sometimes reduced or sometimes expanded and forming three nearly or quite complete transverse bands. Punctures larger, sparser, more distinctly impressed than usual, finer as usual apically; with eight rows of punctures, fifth row sometimes confused, sixth row much reduced, confused, seventh row confused, often reduced; inner and outer rows distinct at apex, nearly always clearly meeting, infrequently somewhat confused.

Prosternum: Male with anterior margin produced into a ventrally directed, rather pointed lobe to just somewhat produced; female with anterior margin feebly produced to evenly arcuate.

Length: 4.0 to 6.0 mm.

Discussion.—A single specimen from the Monros collection determined as *C. guatemalensis* Jacoby (collected at Presidio, Mexico) is very similar to *l. leucomelas*. It differs in that the punctures on the yellowish areas of the elytra are confused and show little or no tendency to align in rows (those on the transverse dark markings are clearly

aligned in rows); in *l. leucomelas* the punctures in the yellowish areas are clearly aligned in rows continuous with those on the dark markings.

Wilcox (1954, p. 384) recorded this species from poplar in Ohio.

Collection data record specimens from *Helianthus tuberosa L.*, *Azalea* leaf, flowers of *Malva* sp., *"Salix presidio,"* willow tree, and cotton.

Distribution.—The U.S. National Museum has 161 specimens from Maryland, Virginia, North Carolina, South Carolina, Tennessee, Alabama, Indiana, Kentucky, Missouri, Mississippi, Louisiana, Illinois, Iowa, Kansas, Texas, Colorado, New Mexico, Arizona, and Utah.

***Cryptocephalus leucomelas trisignatus*, new subspecies**

Figure 103

Head: Creamy yellow; vertex, antennal insertions, clypeus, and labrum reddish.

Pronotum: Background color light orange. Dark markings red to deep red, consisting of four longitudinal, complete, subparallel stripes, rather sharply delimited and distinctly separated; median two nearly straight sided, each just wider than median light stripe they enclose; lateral two stripes distinctly wider than inner two, widest near middle.

Elytra: Background color light orange. Dark markings and punctures red to deep red, each elytron with markings as follows: behind base with a slightly diagonal band, extending from suture laterally to extreme side, this usually continuous, sometimes disconnected near humerus; with two spots at apex, one centered before apex of third stria, other centered before apex of seventh stria; usually also with a more or less distinct, small spot at apex of first stria.

Ventral surface: Ventral surface and legs nearly uniformly reddish. With yellow as follows: on prosternum, on front coxae, on mesosternum and mesepimeron, on basal median portion of first abdominal segment, and sometimes at sides of abdominal segments. Fifth abdominal segment of female with a large, oval, deep depression at center.

Length: 4.5 to 4.7 mm.

Type data.—All three specimens are females from Minnesota. The holotype bears the data Red Falls, Minnesota, Stoner, July 31–1911"; it is USNM type number 69242. One paratype was taken at Hanley Falls, Minnesota, by Stoner on August 1, 1911, the other at Olmstead County, Minnesota, on "6.97" by C. N. Ainslie and is from the collection of F. Knab. All type specimens are in the U.S. National Museum.

Discussion.—This subspecies differs from *l. leucomelas* in that the elytra bear no submedian band and no lateral spots; these are present

in *l. leucomelas*. The subspecific name refers to the three distinct markings of each elytron.

Cryptocephalus leucomelas vitticollis Leconte

FIGURE 59

Cryptocephalus leucomelas vitticollis Leconte, 1880, p. 200.

Pronotum: Creamy yellow to light orange with four orange to red, longitudinal, usually sharply delimited vittae from base to apex, lateral two on each side often narrowly to broadly joined apically. Surface with dual punctation, small punctures sparse, larger punctures small to moderate; surface sometimes scabrous and with larger punctures obscured and small ones absent. Profile more declivous than usual.

Elytra: Creamy yellow to light orange, dark markings orange to red and predominating in extent over yellow or orange. Each elytron with basic pattern as in *l. leucomelas* but much expanded, leaving yellow as follows: in a narrow basal strip, in a transverse median band (not attaining suture), in a narrow transverse, anteapical spot, and in an apical spot. Striae and punctures as in *l. leucomelas*.

Prosternum: As in *l. leucomelas*.

Length: 4.2 to 5.0 mm.

DISTRIBUTION.—Only nine specimens are in the U.S. National Museum, all from Colorado.

Cryptocephalus lunatus, new species

FIGURES 106, 128

General: Body 1.8 times as long as wide; dorsal surface shiny, with short, fine, whitish pubescence; most of ventral surface with fine, fairly dense, whitish pubescence.

Head: Black; front with fairly dense punctures except on vertex, the latter usually somewhat produced; clypeus finely punctate, not sharply delimited, broadest apically. Antennae a little longer than body in male or about three-fourths length of body in female, dark brown to nearly black.

Pronotum: Black throughout; in lateral view rather gibbous; punctation dual, smaller punctures minute and moderate in density, larger punctures moderate in size, rather coarse.

Elytra: Black, at base narrowly reddish-orange; light marking of each elytron in lateral view nearly crescent-shaped, extending from suture (or near suture) to side of elytron and posteriorly at side to middle of elytron; sometimes (two of four specimens) apex of each elytron with small reddish-orange spot. Each elytron with nine rows of fine punctures, striae not or very feebly impressed; all rows fairly

even or with rows six or seven somewhat irregular; rows of punctures very feeble to nearly disappearing at apex; punctures small and sparse; inner and outer rows of punctures at apex not clearly meeting.

Ventral surface: Ventral surface and legs black, tarsi dark brown. Prosternum in male with anterior margin produced backward into a distinct, pointed process, or prosternum in female with median area between coxae somewhat produced into a longitudinal carina. Fifth abdominal segment of female with a deep, oval depression at center, or in male somewhat depressed.

Length: 4.7 to 5.4 mm.

Type data.—This description is from four individuals, all taken at Chisos Mountains, Texas, by D. J. and J. N. Knull. The holotype, a male taken on June 26, 1961, the allotype, taken on July 8, 1955, and one male paratype, same data as allotype, are in the OSU collection. One male paratype, taken June 26, 1961, is in the USNM collection.

Discussion.—This species is most similar to *mucoreus L.* The two can best be distinguished by the extent of the basal reddish spot of the elytra. In *mucoreus*, the spot broadly attains the suture at the center and at the side extends past the middle of the elytra; in *lunatus*, this spot does not or just feebly attains the suture and at the side extends to but not past the middle of the elytra. The specific name *lunatus* refers to the crescent-like red elytral spot.

Cryptocephalus luteolus Newman

Figure 66

Cryptocephalus luteolus Newman, 1840, p. 250.
Cryptocephalus sanfordi Blatchley, 1913, p. 23.
Cryptocephalus sanfordensis Blatchley, Clavareau, 1913, p. 182 [emendation].

Pronotum: Light red, with vague indication of lighter, paired, oblique, basal spots; surface sculpture dual, larger punctures minute.

Elytra: Creamy yellow with punctures and three incomplete vittae dark brown. Each elytron with dark markings as follows: at basal half and apical tip of second interval, at basal two-thirds and apical tip of fourth interval, from humerus to before middle of sixth interval, on sixth interval behind middle laterally to seventh stria, and at apex of sixth interval; dark markings on intervals sharply delimited by striae. With seven rows of punctures and a short series behind humerus, no striae confused, fifth stria sinuate; punctures a little larger than usual and as dense, finer apically as usual; inner and outer rows distinct and clearly meeting at apex.

Prosternum: Male with anterior margin produced ventrally into a fairly distinct lobe; female not seen.

Length: 2.8 mm.

Discussion.—Blatchley (1913, p. 23) recorded this species from willow.

Distribution.—The two specimens I have examined are from Florida and Texas.

Cryptocephalus maccus, new species

Figures 5, 105, 129

General: Body 1.7 to 1.8 times as long as wide; dorsal surface distinctly shining and lacking pubescence; most of ventral surface with short, sparse pubescence.

Head: Dull creamy yellow to light orange; vertex, antennal insertions, clypeus, and labrum plus adjacent areas reddish or dark orange, vertex grooved or depressed; front with rather large to small, irregularly spaced punctures; clypeus sharply delimited, distinctly broadest apically. Antennae of male nearly as long as body, dull orange throughout.

Pronotum: Background color light orange to orange. Dark markings deep reddish to nearly black, more or less sharply delimited, borders often narrowly clouded with reddish; markings consisting of four longitudinal, rather broad stripes, plus a moderate-sized oval spot on each side, usually narrowly joined to adjacent stripe; inner two stripes broadest just beyond middle, not touching, leaving narrow, median light stripe; outer two stripes broadest at or near base, somewhat irregular in form, each usually joining lateral spot at about its middle. Punctation dual, smaller punctures minute and sparse, larger punctures rather small to moderate, generally irregular in size, rather coarse.

Elytra: Background color light orange to orange. Dark markings and punctures deep red to nearly black, markings more or less sharply delimited, usually narrowly clouded with reddish. Dark markings of each elytron as follows: a moderate-sized, rather irregular spot on humerus, nearly attaining both base and lateral margin; a rather small to moderate-sized spot at base of second and third intervals not attaining basal margin; a small spot at apex of sutural stria; a continuous, transverse, more or less undulate band just behind middle attaining lateral margin; two moderate-sized spots at apex, one centered before apex of third stria, other before apex of sixth stria, both irregular in shape and development, sometimes confluent. Each elytron with eight rows of punctures or row six much reduced and confused, then apparently with seven rows; punctures larger, sparser, more irregular than usual, finer apically; punctures tending to be denser and more distinctly arranged in rows in darkly pigmented areas; row six confused, reduced, row seven more or less

confused, rather reduced; inner and outer rows at apex distinct, usually uniting clearly, sometimes with a few confused punctures in this region.

Ventral surface: Ventral surface and legs nearly uniformly reddish. With yellow as follows: on prosternum, mesosternum, mesepimeron, front coxae, at side of each abdominal segment, and a ventral spot before apex of each femur. Prosternum of male with anterior margin produced into a broad, arcuate lobe, posterior margin behind each coxa produced into a sharp, posteriorly directed spine. Pygidium light orange with median stripe and sides reddish; coarsely punctate with a more or less distinct, median, raised carina. Fifth abdominal segment of male feebly depressed.

Length: 4.0 to 4.4 mm.

Type data.—This species is described from four males, all taken in Arizona. The data are as follows (all types in USNM): holotype (type number 69241), "5 mi. s. Rock Springs, Arizona, VI–24–57 R. S. Beal"; paratypes, "Hot Springs, Arizona, 26.6 Barber and Schwarz"; "Sabino Canyon, Arizona, June 19, 1918, 9:30 P.M., F. C. Craighead, *Prosopis juliflora* flowers"; and "Sabino Canyon, Arizona, August 6, 1959, K. V. Krombein."

Discussion.—*C. maccus* is closely related to *bivius* and is easily distinguished from it. In *bivius*, the large transverse common dark marking of the elytra is before the middle; in *maccus*, it is behind the middle. Also, the lateral spot on each side of the pronotum of *bivius* is small and does not join the adjacent stripe; in *maccus*, the lateral spot is moderate in size and usually joins the adjacent stripe. The closest relative of *maccus* is *pseudomaccus*, new species; for the differences see under the latter species.

The name *maccus* is Latin for buffoon, and it was selected because of the resemblance of the color pattern of the dorsal surface to the face of a clown.

I have seen an additional six members of this species from the Burdette White collection. Three were taken at Toltec, Arizona, one at Globe, Arizona, one at San Carlos, Arizona, and the last at Van Horn, Texas. These are not paratypes.

Cryptocephalus merus Fall

Figures 9, 81

Cryptocephalus merus Fall, 1932, p. 23.

Pronotum: Dull creamy yellow to orange with dark markings and large punctures reddish to brown; dark markings tending to form four longitudinal vittae, these indistinct and poorly differentiated or indicated only at base; usually with a small, pigmented, coarsely

punctate spot at each side. Punctation dual, smaller punctures often sparse, larger punctures varying widely in size, from minute to large and coarse, usually densest and coarsest anteriorly and at sides, most dense at lateral spot.

Elytra: Dull creamy yellow to orange, striae and dark markings reddish to dark brown and distinct to (usually) vague, dark markings consisting of round to elongate spots. Markings of each elytron as follows: one near apex of first interval (vague to absent); one at basal fourth of third interval (distinct to vague); one at apex of fifth interval (distinct to vague); one at apex of seventh interval (distinct and expanded to vague, reduced); one on humerus (nearly always distinct); one at middle of eighth interval (distinct to very feebly indicated). With eight rows of punctures and a series behind humerus, fifth row usually confused, sixth row always confused, sometimes joining fifth row; punctures a little larger, denser than usual, not or slightly finer apically; inner and outer rows distinct apically, usually clearly meeting.

Prosternum: Anterior margin in male produced ventrally into a distinct, broad lobe, middle of prosternum with a stout, sharp, ventrally directed spine, anterior margin in female as that in male, but middle of prosternum lacking a spine.

Length: 3.8 to 4.3 mm.

Discussion.—A single specimen from Chihuahua, Mexico, determined by Monros as. C. *taeniata* Suffrian is very similar to *merus* and raises the possibility that the two may be synonymous.

Distribution.—Nine specimens have been examined from Texas and Arizona.

Cryptocephalus mucoreus Leconte

Figures 20, 131

Cryptocephalus mucoreus Leconte, 1859a, p. 23.

Pronotum: With fine, silvery pubescence; black throughout; punctation dual, larger punctures moderate, dense.

Elytra: With fine, silvery pubescence. Each elytron black, following parts orange to red; basal fourth and side to or (infrequently) past middle; apex; basal marking, rarely almost attaining apical spot; posterior margin of basal marking concave. With nine rows of punctures, sixth and seventh rows sometimes confused, punctures rather small and indistinct, obscured by roughened surface; inner and outer rows generally distinct at apex and usually meeting.

Prosternum: Anterior margin in male with a large, sharp, downward and posteriorly directed spine; anterior margin in female simple or with a feeble, longitudinal, median carina.

Length: 4.2 to 5.5 mm.

Discussion.—Numerous authors have presented this species as a synonym of *basalis*. Wilcox (January 1953, p. 51) cited it as a valid species distinct from *basalis* and presented the characters which serve to distinguish the two. This action, I believe, was correct; however, Pallister (May, 1953, p. 28) resynonymized *mucoreus* with *basalis*, but Wilcox's treatment of 1954 (p. 382) amounted to a revalidation of *mucoreus*.

Distribution.—The 52 specimens on hand are from Texas, Kansas, Missouri, and Kentucky.

Cryptocephalus multisignatus Schaeffer

Figure 28

Cryptocephalus multisignatus Schaeffer, 1933. p, 323.

Pronotum: Dark brown nearly throughout, lateral and apical margins lighter; punctation dual, larger punctures small.

Elytra: Dark brown with vaguely to sharply delimited light orange markings on each elytron as follows: a small spot at scutellum; a spot at lateral basal half, with inner posterior margin extending to but not attaining scutellum; a transverse, anteapical band, not attaining side or suture; an apical spot. With eight rows of punctures, sixth and seventh rows confused; punctures becoming finer apically as usual, elsewhere as large and dense as usual; inner and outer rows at apex distinct, not quite meeting.

Prosternum: Male with anterior margin produced ventrally into a stout, blunt spine; female not examined.

Length: 3.9 mm.

Discussion.—The male holotype (the only type specimen) is in the U.S. National Museum and has been assigned type number 69093; it was taken in Arizona. It is the only example of this species that has been seen, so the extent of variation of the characters referred to in the description and key is not known. Schaeffer (1933, p. 323) erred in giving the length of his type as 3.5 mm.

Cryptocephalus mutabilis Melsheimer

Figures 76, 77

Cryptocephalus mutabilis Melsheimer, 1848, p. 172.
Cryptocephalus dispersus Haldeman, 1849, p. 248.
Cryptocephalus discoideus Suffrian, 1852b, p. 49.

Pronotum: Orange to red or black and usually with two elongate, yellowish, oblique basal spots; basal margin more or less, lateral margin broadly, and apical margin rather narrowly creamy yellow to light orange; lighter markings sometimes expanded and predominating; light basal markings often reduced to absent, side and apical markings

always present; sometimes discal dark area red with margins blackish. Punctation dual, larger punctures minute to small.

Elytra: Dull creamy yellow to very light orange and with orange to red or black markings. Each elytron with small oval spots as follows: at base of second interval, at base of fourth interval, on humerus, before base of eighth stria (sometimes absent), before base of sixth stria, and at apex of third and seventh intervals (latter two often expanded). Elytron with a large spot from suture behind scutellum diagonally to fourth stria to past its middle, then diagonally to or nearly to elytral apex; an elongate spot at side behind middle; smaller spots of above pattern (except humeral) often reduced or expanded, large discal spot often expanded and joining other markings. With eight rows of punctures, fifth sometimes, sixth always, and seventh sometimes confused; punctures as dense but smaller than usual, finer apically, often nearly disappearing; inner and outer rows distinct at apex, usually clearly meeting.

Prosternum: Anterior margin in male somewhat produced ventrally into a broad lobe; anterior margin in female somewhat to feebly produced into a lobe.

Length: 4.3 to 6.5 mm.

Discussion.—In a few specimens (mostly males), the two small spots at the base of intervals two and four are confluent and join the broad discal spot. This produces a color pattern very similar to that of *insertus*, but in *mutabilis* there is a small spot on the eighth stria just below and behind the humeral spot. In *insertus*, the eighth stria lacks such a spot or is covered by an adjacent, expanded spot.

Sexual dimorphism is rather marked in the species. The males range in length from 4.3 to 5.3 mm., and the dark markings are usually black. The females range from 5.3 to 6.5 mm. in length, and the dark markings are usually reddish.

Douglass (1929, p. 9) recorded this species on peanuts. Label data cite beating oak, cherry foliage, and on *Kalmia*.

Distribution.—The 268 specimens in the USNM collection are from Quebec, Ontario, Massachusetts, New York, New Jersey, Maryland, Pennsylvania, Virginia, North Carolina, Tennessee, West Virginia, Ohio, Illinois, Wisconsin, Mississippi, Louisiana, Missouri, Iowa, Minnesota, Kansas, Nebraska, and Texas.

Cryptocephalus nanus Fab.

Figure 44

Cryptocephalus nanus Fab., 1801, p. 56.

Pronotum: Light orange to orange or light reddish, sometimes with two vague, lighter, basal, oblique spots. Punctation much reduced,

smaller punctures very sparse to absent, larger punctures minute, sparse.

Elytra: Dark reddish to black, lateral margin below and behind humerus and epipleuron vaguely reddish to yellowish. With seven rows of regular punctures and a short series behind humerus; punctures as large, dense as usual, finer apically; inner and outer rows distinct at apex, usually clearly meeting.

Prosternum: Anterior margin of both sexes produced downward into a short, rather broad lobe.

Length: 2.8 to 3.5 mm.

Distribution.—The 12 specimens examined are from Florida, Georgia, Alabama, Tennessee, Kentucky, Arkansas, and Mississippi.

***Cryptocephalus notatus notatus* Fab.**

Figure 29

Cryptocephalus notatus Fab. 1787, p. 83.

Pronotum: Dark brown to (usually) black, nearly always with a bluish tint; punctation dual, larger punctures minute to (infrequently) moderate in size and rather coarse.

Elytra: Dark brown to (usually) black, each elytron with light orange markings as follows: a large spot at side from base of fourth stria, arching to about middle of elytron at lateral margin (humerus usually dark); a large apical spot; basal spot never attaining scutellum or apical spot. With eight and sometimes nine rows of punctures, fifth row sometimes, sixth nearly always confused, sometimes double, seventh row sometimes confused; punctures fine and dense as usual, finer apically; inner and outer rows distinct at apex, usually clearly meeting.

Prosternum: Anterior margin in male with a distinct, sharp, ventrally directed spine; anterior margin in female with a more or less distinct, sometimes pointed lobe.

Length: 3.3 to 4.8 mm.

Discussion.—Usually there are eight rows of punctures on each elytron, and the sixth row is distinctly confused. In some, the punctures of the sixth row tend to form a nearly double row, and, at the extreme, they form two distinct, close rows; in such individuals, there are nine rather than eight rows of punctures.

The male genitalia of *n. notatus*, *n. fulvipennis*, *n. quadrimaculatus*, and *n. sellatus* have been cleared, compared, and found essentially identical.

Distribution.—The 141 specimens in the USNM collection are from Ontario, Quebec, Maine, Vermont, New Hampshire, Connecticut, Rhode Island, Massachusetts, New York, New Jersey, Pennsylvania,

Virginia, West Virginia, Ohio, Michigan, and Iowa. A series of specimens bear the label "Canon City, Colorado"; this may be in error.

Cryptocephalus notatus fulvipennis Haldeman

FIGURES 33, 133

Cryptocephalus fulvipennis Haldeman, 1849, p. 255.

Pronotum: As in *n. notatus*.

Elytra: Dull light orange to red throughout; punctation similar to *n. notatus* but more frequently with nine rows of punctures.

Prosternum: Anterior margin in male rather distinctly produced into a more or less pointed lobe; anterior margin in female produced into a rather short, broad lobe.

Length: 4.1 to 4.8 mm.

DISTRIBUTION.—All five specimens on hand are from Florida.

Cryptocephalus notatus quadrimaculatus Say

FIGURE 30

Cryptocephalus quadrimaculatus Say, 1824, p. 441.

Pronotum: Color and sculpture as in *n. notatus*.

Elytra: Color very similar to that of *n. notatus* except basal spot easily attains scutellum; punctation as that of *n. notatus*.

Prosternum: Male with anterior margin produced into a distinct, stout, ventrally directed spine; female with anterior margin produced into a short, broadly rounded to somewhat pointed lobe.

Length: 3.6 to 5.5 mm.

DISCUSSION.—Label data provide the following records: strawberry, collected on blackberry, feeding on dewberry, *Rhus*, blackberry feeding and mating, *Prunus angustifolia*, bud of apple, strawberry vines, on *Ribes sativum* Syme (*"Ribes vulgare"*), on *Betulia populifolia* Marsh., pear, on peach, on grape.

DISTRIBUTION.—The USNM collection contains 272 specimens of the subspecies from Canada, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Maryland, Delaware, Virginia, Pennsylvania, North Carolina, South Carolina, Georgia, Tennessee, Alabama, Ohio, Illinois, Wisconsin, South Dakota, Iowa, Arkansas, Kansas, Montana, Minnesota, Colorado, Idaho, and Utah. Blatchley (1924, p. 53) recorded this subspecies from Florida.

Cryptocephalus notatus sellatus Schaeffer

FIGURE 31

Cryptocephalus notatus sellatus Schaeffer, 1933, p. 322.

Pronotum: Color and sculpture as *n. notatus*.

Elytra: Color and basic pattern similar to *n. notatus*, but basal spot always attaining scutellum and apical spot joining latter at about sixth to eighth intervals; punctation similar to that of *n. notatus*.

Prosternum: Male with anterior margin produced downward into a sharp, distinct spine; female with anterior margin produced downward into a pointed lobe.

Length: 3.6 to 5.1 mm.

Discussion.—Three female cotypes are in the U.S. National Museum. The specimen bearing Schaeffer's determination label has the data "Tex." and is hereby designated lectotype; it is assigned USNM type number 69094. The pins of each of the two cotypes have a black strip of paper but no collection data. In the original description, the collection data are given as "New Braunfels, Texas, (O. Dietz)."

Collection information includes mating and feeding on willow, damaging strawberries, on blooming live oaks, and on *Quercus* sp.

Distribution.—The 81 individuals in the USNM collection are from Pennsylvania, Indiana, Nebraska, Kansas, South Dakota, Texas, Oklahoma, Colorado, Utah, Minnesota, Quebec, and Manitoba.

Cryptocephalus obsoletus obsoletus Germar

Figures 78, 134

Cryptocephalus obsoletus Germar, 1824, p. 559.
Cryptocephalus ornatus Suffrian [not Fabricius], 1852, p. 229.

Pronotum: Dull light orange to red, usually bearing indistinct light markings in two oblique basal spots, and with lateral and apical margins light orange to yellowish; pronotum sometimes unicolorous or with light markings somewhat expanded. Punctation dual or surface finely alutaceous and smaller punctures completely obscured, larger punctures moderate to large, rather coarse, often rather elongate.

Elytra: Creamy yellow to dull orange (punctures often dark) usually with two longitudinal vittae, orange to dark reddish, sometimes black in part, vague to rather distinct but not sharply delimited. Vittae of each elytron from bases of second, third, and fourth interval to apex of second interval and from humerus to apex of fourth to eighth intervals; inner vitta rarely black at base, outer vitta sometimes black at base and apex to nearly black throughout; rarely with no trace of vittae. With nine rows of punctures, fifth to eighth rows crowded, sixth and seventh usually somewhat confused; punctures often larger, nearly always more distinctly impressed than usual, finer apically; intervals, especially at sides, distinctly convex; inner and outer rows quite distinct at apex, always clearly uniting.

Prosternum: Anterior margin in male produced downward into a strong, stout, blunt spine; anterior margin in female produced downward into a rather short, pointed lobe.

Length: 4.3 to 6.0 mm.

Discussion.—Collection data record specimens from *Ascyrum stans* Michx. leaf, on cucumber, on tomato leaves, on lima bean foliage, on okra foliage, and on *Hypericum fasciculatum* Lam. blossoms.

Distribution.—The 114 specimens in the U.S. National Museum collection are from Florida, Georgia, Alabama, South Carolina, North Carolina, Virginia, Louisiana, and Mississippi.

***Cryptocephalus obsoletus indistinctus*, new subspecies**

Figure 107

General: Body stout, 1.6 times longer than wide; dorsal surface rather shining, lacking pubescence; ventral surface with very short and sparse, yellowish pubescence.

Head: Dull orange with yellowish near eyes and on clypeus to dull orange throughout; front with moderate-sized punctures; clypeus rather sharply delimited, more or less concave, distinctly broadest apically. Antennae over two-thirds length of body in male, or over half length of body in female; usually with basal five segments dull orange, apical segments brown to dark brown.

Pronotum: Dull orange throughout, sometimes lighter or yellowish as follows: at base in two vague oblique spots, narrowly at side, narrowly at apex. Punctation dual, smaller punctures minute, moderate in density, indistinct, larger punctures moderate in size and density, rather coarse, longitudinally elongate.

Elytra: Dull orange throughout, two intervals at side of each elytron more or less yellowish; humerus usually dark reddish; punctures a little darker than remainder; with indistinct to obsolete indications of darker longitudinal stripes on intervals two, three, six, seven, and eight. Each elytron with nine rows of moderate-sized, rather close punctures; rows six and seven rather to distinctly confused; punctures smaller toward apex; inner and outer rows distinct at apex and nearly or quite meeting.

Ventral surface: Ventral surface and legs predominantly dull orange, lighter than remainder at center of prosternum, on mesosternum, and on first abdominal segment at center; metasternum mostly or partly blackish. Both sexes with anterior margin of prosternum produced ventrally into a distinct, pointed spine. Fifth abdominal segment at center with a deep, oval pit in female, or normal to faintly depressed in male. Pygidium dull orange, coarsely, densely punctate.

Length: 3.9 to 4.3 mm.

Type data.—All four specimens were taken at Wrentham, Massachusetts, on July 9, 1947, by B. E. White. The male holotype, the allotype, and a male paratype are in the CAS collection. A single male paratype is in the U.S. National Museum.

Discussion.—This subspecies is distinguishable from *o. obsoletus* by the development of the prosternal spine and on the basis of color. In *o. obsoletus*, the female bears a short, broad spine; the male has a broad, pointed spine. In *o. indistinctus*, both sexes bear an elongate, pointed spine distinctly longer than in either sex of *o. obsoletus*. Also, *o. obsoletus* bears two vague to distinct, longitudinal dark stripes; in *o. indistinctus*, these are vague to obsolete. In addition, *o. obsoletus* is known only from Virginia to Florida and Louisiana, and *o. indistinctus* is known only from Massachusetts; finally, *o. obsoletus* ranges in length from 4.3 to 6.0 mm. and *o. indistinctus* is 3.9 to 4.3 mm. long. The male genitalia of *o. indistinctus* are essentially the same as the illustrations for those of *o. obsoletus*.

Cryptocephalus ochraceus Fall

Figure 36

Cryptocephalus ochraceus Fall, 1932, p. 25.

Pronotum: Dull creamy yellow with large punctures red, disk irregularly clouded with red; punctation dual, larger punctures large, coarse.

Elytra: Dull creamy yellow but with striae, humerus, and irregular lateral spots reddish. With nine more or less regular rows of punctures, these often with a puncture or two misplaced, often confused apically, rows six, seven, and eight confused; punctures as large and dense but more distinctly impressed than usual, only slightly finer apically; inner and outer rows at apex obscured by confused punctures, not meeting.

Prosternum: Anterior margin in female evenly arcuate; male not examined.

Length: 5.1 mm.

Discussion.—The above description is from a single female taken at Capron, Florida.

Cryptocephalus pallidicinctus Fall

Cryptocephalus pallidicinctus Fall, 1932, p. 21.

This is the only described North American species I have not seen during this work. Following is Fall's original description:

> Moderately robust. Head black, a quadrate post-clypeal area, a small spot posteriorly adjacent thereto, and the entire inner border of the eyes narrowly whitish yellow. Antennae black.

Prothorax orange red, the extreme apical edge pale yellow, the basal edge very narrowly blackish; surface sparsely feebly and very finely punctate.

Elytra black, with narrow whitish yellow basal and lateral margin which at apex does not quite reach the sutural angle; striae moderately impressed, nearly as in *sanguinicollis*, the sutural not reaching the middle of the elytra, 6th very widely interrupted medially, 7th dislocated at basal third.

Entire upper surface polished and strongly shining. Pygidium coarsely punctate, obtusely carinate at middle in basal third. Body beneath black; prosternum whitish yellow, with moderate cuspiform lobe in front, the hind angles with erect spiniform processes tipped with black.

Length: 4 mm.; width: 2.3 mm.

Discussion.—The single male specimen from which Fall described the species was taken at Palm Springs, California.

Cryptocephalus pinicola Schaeffer

Figure 25

Cryptocephalus pinicola Schaeffer, 1920, p. 326.

Pronotum: Black throughout, nearly always with a bluish tint; punctation dual, larger punctures minute to moderate in size and coarse.

Elytra: Dark brown to (usually) black, usually with a bluish tint. With light orange to orange or light reddish markings on each elytron as follows: from fourth or fifth stria to side and posteriorly not quite to middle, marking usually nearly square, sometimes reduced and with humerus black, sometimes a little expanded and attaining middle of elytron; a large apical spot sometimes present, usually reduced to completely absent. With nine rows of punctures, or with row six or seven much reduced, then evidently with eight rows; fifth sometimes, sixth and seventh always confused, one of latter two may be reduced; punctures as large, dense as usual, distinctly finer at apex; inner and outer rows at apex distinct, usually clearly meeting.

Prosternum: Male with anterior margin produced downward into a distinct, sharply pointed spine; female with anterior margin produced downward into a rather short, pointed lobe.

Length: 3.3 to 5.1 mm.

Discussion.—A collection note refers to a specimen taken on flowers of *Ceanothus fendleri* Gray (*"Caenothus fendleri"*).

Five cotypes are in the U.S. National Museum and bear type number 42410. The specimen with Schaeffer's determination label, a male, is hereby designated lectotype. It bears the label information "Carr's Peak, Huach Mts., VII, Ariz., on pine 9000 ft." Two cotypes, one female and one male, bear the same data except that the label of the latter does not include the last line. Another female cotype is from the above locality but was taken on "VII.10." The final specimen bearing a museum cotype label, a male, bears collection data not

given in the original description. The information is "Palmerlee Cochise Co. VI Ariz." Schaeffer's statement that two of the specimens bear the data "beaten from pine" is in error.

Distribution.—The USNM collection has 81 specimens from Arizona, New Mexico, Utah, and Colorado.

Cryptocephalus pseudomaccus, new species

Figures 108, 132

General: Body 1.7 to 1.8 times as long as wide; dorsal surface shining, without pubescence, most of ventral surface with short and sparse, whitish pubescence.

Head: Creamy yellow, vertex, clypeus, labrum, and antennal insertions reddish (in one specimen entire head more or less reddish); front with moderate-sized punctures; clypeus rather sharply delimited at base and sides, distinctly broadest apically, rather concave. Antennae about three-fourths length of body in male or over half as long as body in female; reddish, basal segments more or less orange.

Pronotum: Background color creamy yellow to light orange; with four broad, dark reddish, sharply delimited, longitudinal vittae, also, a rather small, dark reddish, isolated spot present on each side; vittae extending from base to apex, inner margins of two median vittae nearly parallel, other margins outwardly arcuate. Punctation dual, smaller punctures minute, not dense, larger punctures small to moderate in size and a little coarse.

Elytra: Background color creamy yellow to light orange, punctures and markings dark reddish. Dark markings on each elytron as follows: a moderate-sized spot on humerus, a small spot below and a little behind humerus; a small spot behind humerus (much reduced in allotype and paratype); a small spot behind the preceding; a small spot near base of third interval (much reduced in paratype, absent in allotype), a moderate-sized to small spot at suture before middle; behind middle a large, wide, transverse band, this attaining fifth row of punctures, lateral to this a moderate-sized spot attaining margin; at apex two moderate-sized spots, outer smaller. Each elytron with first five rows of punctures fairly even and distinct, rows at side (except last) reduced and confused, seven or eight rows may be counted; punctures moderate in size, not close, smaller to apex as usual; inner and outer rows distinct and usually clearly meeting at apex.

Ventral surface: Most of ventral surface and legs orange or red. Following parts yellowish to orange: prosternum at center, anterior coxae, mesosternum and side pieces, first abdominal segment at center, each segment at side, sometimes also fifth abdominal segment at center. Anterior margin of prosternum normal to feebly produced into an arcuate lobe in male or not produced in female. Fifth abdominal seg-

ment at center with a deep, oval pit in female or fifth segment feebly depressed at center in male. Pygidium longitudinally carinate at center, red to orange at base and on carina, with yellowish spots on each side near apex.

Length: 4.0 to 4.2 mm.

TYPE DATA.—This description is from three individuals taken at Globe, Arizona, by Parker. The holotype (male, in California Academy of Sciences) was taken on April 16, 1934 on *Acacia greggii*, the allotype (also in California Academy of Sciences) bears the following data "July V–11–1934"; a male paratype was taken on April 16, 1934 on *Acacia greggii* and is in the USNM collection.

DISCUSSION.—The species is quite similar to *maccus* and can be distinguished in the basis of the submedian elytral spot. In *maccus*, this spot is undulate and attains the lateral margin; in *pseudomaccus*, it is not undulate and does not attain the lateral margin.

Cryptocephalus pubicollis Linell

FIGURE 24

Cryptocephalus pubicollis Linell, 1897, p. 480.

Pronotum: With silvery pubescence; black throughout; punctation dual, larger punctures moderate in size, dense, and distinctly impressed.

Elytra: Dark brown to black, each elytron with orange to reddish humeral marking extending from base of second stria diagonally to past middle at side. With nine rows of punctures, rows six and seven nearly always confused or one or the other much reduced; punctures as large, dense as usual, much finer at elytral apex; inner and outer rows of punctures more or less distinct at apex, usually not clearly meeting.

Prosternum: Anterior margin in male with a large sharp spine directed diagonally backward; anterior margin in female produced into a broad, sometimes pointed lobe.

Length: 5.0 to 6.0 mm.

DISCUSSION.—All three members of the type series (two females, one male) are in the U.S. National Museum and bear type number 1308 (not 1307 as cited in the original description); these specimens were taken in Arizona by Morrison. The single male I hereby designate as the lectotype and have so labeled it.

DISTRIBUTION.—All 14 specimens examined are from Arizona.

Cryptocephalus pubiventris Schaeffer

FIGURE 32

Cryptocephalus pubiventris Schaeffer, 1920, p. 326.

Pronotum: Nearly uniformly dark brown to black; punctation dual, larger punctures small to moderate and rather coarse.

Elytra: Dark brown to black; each elytron usually with orange to red markings as follows: a basal spot attaining suture and usually attaining middle of elytron at side, an apical spot, a basal spot often attaining apical spot at side of elytron, light markings infrequently expanded and leaving only anteapical dark spot, or even with elytron entirely light. With nine (sometimes evidently eight) rows of punctures, rows five to eight crowded and sometimes confused, rows six and seven usually confused, one or the other often much reduced; punctures as large, dense as usual, finer at elytral apex; inner and outer rows distinct at apex, usually clearly uniting.

Prosternum: Anterior margin in male strongly produced into a pointed lobe; anterior margin in female produced into a broad, pointed lobe.

Length: 5.0 to 6.3 mm.

Discussion.—The two cotypes are in the U.S. National Museum; both bear the data "Huach Mts. VII.29 Ariz." and bear the type number 42411. One is a male, the other a female; I hereby designate the male as lectotype.

In a single specimen, the light elytral markings are expanded, leaving only a spot of black; in another individual, the elytra are entirely light. These individuals may be deserving of subspecific rank, but the small series on hand (10 individuals) does not provide a reliable indication of the variation in this species.

A series of specimens in the U.S. National Museum from Mexico and Honduras determined as *C. militaris* Suffrian is very similar to *pubiventris*. They differ in that the dorsal surface (except the orange markings) is usually distinctly bluish or greenish, the orange markings at the apex of the elytra are often reduced or absent, and the basal orange spot never attains the apical spot when the latter is present.

A single specimen from Mexico determined as *C. smithi* Jacoby is quite similar to *pubiventris* except that the basal spot does not quite attain the suture.

Distribution.—The ten specimens I have examined are all from Arizona.

Cryptocephalus pumilus Haldeman

Figure 69

Cryptocephalus pumilus Haldeman, 1849, p. 249.
Cryptocephalus pseudolus Suffrian, 1858, p. 373.

Pronotum: Dull yellowish to (usually) dull orange, disk usually more or less clouded with light to dark brown; punctation dual, larger punctures moderate to rather large in size, often coarse.

Elytra: Dull yellowish to (usually) dull orange, humerus more or less dark, often with vague to distinct brown markings at middle of

base and at middle before apex, basal spot sometimes extending to middle of elytron on second and fourth intervals. With seven rows of punctures and a short series behind humerus, sixth row sometimes slightly confused, punctures a little smaller, finer than usual, distinctly finer to apex; inner and outer rows usually distinct at apex, often clearly meeting, punctures sometimes obsolete at apex.

Prosternum: Anterior margin in both sexes evenly arcuate.

Length: 2.0 to 2.7 mm.

Discussion.—All five specimens from Virginia (apparently the northernmost part of the range) bear rather distinct dark markings. Specimens from other parts of the range (including Florida) rarely have markings that are as distinct.

The concavity of the fifth abdominal sternite of the female is less developed in this species than is usually the case.

Distribution.—The USNM collection of the species totals 52 individuals from Florida, Georgia, North Carolina, Louisiana, and Virginia.

Cryptocephalus quadruplex Newman

Figures 22, 23

Cryptocephalus quadruplex Newman, 1841, p. 78.
Cryptocephalus quadriguttulus Suffrian, 1852b, p. 65. [New synonymy.]

Pronotum: Dark brown, to (usually) black; infrequently with a faintly bluish luster; punctation dual, larger punctures minute to small, sometimes coarse.

Elytra: Dark brown to black, each elytron with light orange to orange markings as follows: at base from third stria to side and posteriorly to middle of elytron, often nearly square, this sometimes reduced and with humerus dark, sometimes with inner posterior angle produced toward (but not attaining) suture; with a moderate-sized spot at apex. With eight or nine rows of punctures, fifth sometimes, sixth and seventh usually confused (one of latter two often much reduced, thus leaving eight rows); punctures rather larger, sparser than usual, much finer to apex; inner and outer rows usually distinct at apex, often clearly meeting, punctures at apex sometimes obsolete.

Prosternum: Anterior margin in male with a distinct, usually sharp, ventrally directed spine; anterior margin in female evenly arcuate to somewhat produced into a broad, sometimes pointed lobe.

Length: 2.9 to 4.0 mm.

Discussion.—*C. quadriguttulus* until now has been ranked as a subspecies of *quadruplex*, and the two subspecies have been separated on the basis of the relative size of the basal spot of the elytra. Leconte (1880, p. 200) described the basal spot of *quadruplex* as small, reduced, and a little wider behind; that of *quadriguttulus* was described

as much larger and reaching the middle of the sides of the elytra. Schaeffer (MS. key) described the humeral spot in *quadruplex* as small and scarcely wider apically and in that of *quadriguttulus* as larger and obliquely widening toward the apex. In the USNM collection, there are over 400 specimens previously determined as *quadruplex* or *quadriguttulus*. These series show considerable variation in the development of the basal elytral spot. Within the eastern and middle parts of the range of the specimens, I find continuous intermediates between individuals representing the extremes in development of the basal spot. I have synonymized *quadriguttulus* because these color differences are not consistent and intermediate forms are numerous. At one extreme of development, the spot is within the basal one-third of the elytra, and its inner margin borders the fifth interval. At the other extreme, the spot is within the basal half of the elytra, its inner margin is diagonal at its base, joins the fourth stria, and apically attains the middle of the second interval. Most of the individuals with the basal spot reduced are from the New England States (New York, Massachusetts, Rhode Island) but some extend to Michigan, Wisconsin, and Illinois. None of these individuals bear labels indicating they were collected in the westernmost part of the range (Iowa, Nebraska, Kansas). The specimens from the western part of the range have the spot at about its maximum size. In these individuals, the inner margin of the basal spot is nearly always straight. Individuals from other parts of the range that have a large spot often have the inner margin arcuate, and the markings thus are similar to those of *b. binominis*.

Douglass (1929, p. 8) recorded this species from *Rhus glabra* L.

Distribution.—The USNM collection has a total of 403 individuals from Ontario, New Hampshire, Connecticut, Rhode Island, Massachusetts, New York, New Jersey, Delaware, Maryland, Pennsylvania, Virginia, North Carolina, Alabama, Georgia, Kentucky, West Virginia, Ohio, Indiana, Illinois, Michigan, Wisconsin, North Dakota, Arkansas, Missouri, Louisiana, Iowa, Kansas, Nebraska, Montana, Minnesota, Oklahoma, and Texas.

Cryptocephalus quercus Schaeffer

Figure 45

Cryptocephalus quercus Schaeffer, 1906, p. 232.

Pronotum: Dull light orange to orange, disk usually vaguely darker; punctation usually dual, larger punctures minute to blending with small punctures, latter sparse.

Elytra: Dull creamy yellow to light orange, with striae, humerus, and dark markings more or less reddish. Each elytron with two vague

to distinct transverse, undulating bands, first at basal third, second just behind middle; bands often extending side to side, usually very vague or incomplete at about middle. With nine rows of punctures, rows six, seven, and eight more or less confused, sometimes entwined or abbreviated, latter two rows often interconnected; punctures as large, dense as usual, finer at elytral apex; inner and outer rows distinct at apex, often clearly meeting, sometimes disconnected.

Prosternum: Anterior margin in both sexes produced ventrally into a distinct, broad lobe.

Length: 5.0 to 6.7 mm.

Discussion.—Two female specimens in the U.S. National Museum bear the red museum cotype labels and the type number 42309. One bears the data "Palmerly Cochise Co., VII.24 Ariz.," the other specimen has the data "Huach Mts. VII.12 Ariz." In the original description the locality of collection is given only as Huachuca Mountains, Arizona; Schaeffer made no mention of the number of specimens from which he described the species. Types of other of Schaeffer's species (as *s. simulans* and *umbonatus*) bear the locality of collection as Palmerly, Cochise County, Arizona; the locality of collection in their original descriptions is given as Huachuca Mountains. The type specimen of *quercus* bearing the data "Huach Mts." I hereby designate lectotype.

Distribution.—The six specimens examined are all from Arizona.

Cryptocephalus sanguinicollis sanguinicollis Suffrian

Figure 41

Cryptocephalus sanguinicollis Suffrian, 1852b, p. 78.

Pronotum: Orange to light or deep red throughout; punctation dual, larger punctures minute to small, often coarse.

Elytra: Dark brown to (usually) black throughout; with eight rows of punctures, fifth sometimes, sixth and seventh nearly always confused, latter two rows sometimes reduced; punctures as large, dense as usual, much finer at elytral apex; inner and outer rows usually distinct at apex, often clearly meeting.

Prosternum: Anterior margin in male distinctly produced downward into a more or less pointed lobe; anterior margin in female produced into a more or less distinct lobe.

Length: 3.2 to 4.9 mm.

Discussion.—One specimen in the collection was taken from *Purshia tridentata* DC. ("*Pursnia tridentata*").

Beller and Hatch (1932, p. 137) record this species as mainly occurring on *Salix*, but also on blackberries, roses, strawberries, wild licorice, and prunes.

DISTRIBUTION.—The 131 specimens in the U.S. National Museum are from California, Nevada, Utah, Idaho, and Washington.

Cryptocephalus sanguinicollis nigerrimus Crotch

FIGURE 42

Cryptocephalus nigerrimus Crotch, 1874, p. 78.

Pronotum: Dark brown to black throughout, sometimes with reddish at sides; punctation as in *s. sanguinicollis*.

Elytra: Dark brown to black throughout; punctation as in *s. sanguinicollis*.

Prosternum: As in *s. sanguinicollis*.

Length: 3.5 to 4.5 mm.

DISTRIBUTION.—The eleven specimens examined are all from California.

Cryptocephalus schreibersii Suffrian

FIGURES 8, 34

Cryptocephalus rugicollis Haldeman, 1849, p. 258 [preoccupied].
Cryptocephalus schreibersii Suffrian, 1852a, p. 288.

Pronotum: Dull orange to dull red, usually with basal and apical margins narrowly and lateral margins more broadly lighter; surface with coarse, dense, longitudinal wrinkling at side becoming large and elongate or simple punctures, minute punctation sometimes visible.

Elytra: Dull creamy yellow to dull orange with humerus and punctures darker; usually with no markings, sometimes with three vague to rather distinct, more or less reddish, transverse, undulating bands. With nine rows of punctures, often with punctures not confused, sometimes with rows five and/or six and seven somewhat confused, adjacent striae of rows five to nine sometimes interconnected; punctures usually larger, denser than usual, finer at elytral apex; inner and outer rows at apex usually distinct, often clearly meeting, sometimes obscured by confused punctures and not meeting.

Prosternum: Anterior margin in male produced into a short, broad, more or less pointed lobe; anterior margin in female feebly produced into a broad lobe.

Length: 3.0 to 4.5 mm.

DISCUSSION.—Collection data record specimens from *Pinus* and pitch pine.

DISTRIBUTION.—The 70 specimens in the U.S. National Museum are from Massachusetts, New York, New Jersey, Maryland, Virginia, North Carolina, South Carolina, Alabama, Florida, Georgia, Mississippi, Pennsylvania, and Michigan.

Wilcox (1954, p. 383) recorded the species from Ohio.

Cryptocephalus simulans simulans Schaeffer

FIGURE 47

Cryptocephalus simulans Schaeffer, 1906, p. 231.

Pronotum: Disk usually orange and clouded with brownish or black, varying to black with two oblique elongate light basal spots and with apical and lateral margins broadly creamy yellow to light orange; with a small coarsely punctate dark to black spot on each side. Punctation usually dual, small punctures sparse, larger punctures on disk minute to small, distinctly larger at side.

Elytra: Creamy yellow to light orange, each elytron with brown to black, usually distinct markings as follows: on sutural stria; on second interval, complete to broadly interrupted; on base, middle, and apex of fourth stria; on humerus, this joining a more posterior spot on sixth and seventh intervals; on sixth and seventh intervals behind middle; at apex of seventh interval. With eight rows of punctures, fifth sometimes, sixth and seventh always confused, sixth often much reduced; punctures as large, dense as usual, finer at elytral apex; inner and outer rows at apex distinct, usually clearly meeting.

Prosternum: Anterior margin in female produced downward into a broad, distinct lobe; male not examined.

Length: 5.4 to 6.3 mm.

DISCUSSION.—There are two female cotypes in the U.S. National Museum with type number 42307. The data are as follows: "Palmerly Cochise Co. VII.25 Ariz." and "Palmerly Cochise Co. VI.21 Ariz."; I hereby designate the former as lectotype. In the original description, the locality of collection is given as Huachuca Mountains, Arizona. Schaeffer gives the months of collection as June, July, and August, but I find that none of his specimens in the USNM collection were collected in August.

DISTRIBUTION.—All five specimens in the USNM collection are females and were taken in Arizona.

Cryptocephalus simulans conjungens Schaeffer

FIGURES 49, 138

Cryptocephalus simulans conjungens Schaeffer, 1934, p. 460.

Pronotum: Red to dark red, light markings creamy yellow to light orange; usually with two elongate, oblique, light basal spots (sometimes broadly joined, more often much reduced to nearly absent); lateral margin rather narrowly light; apical margin narrowly light. Punctation as in *s. simulans*.

Elytra: Creamy yellow to light orange, dark markings red to brown or nearly black, pattern as that of *s. simulans* except stripe on second

interval often reduced but not completely interrupted. Punctation as in *s. simulans*, except punctures darkly pigmented, usually larger.

Prosternum: Anterior margin in both sexes produced ventrally into a distinct, broad, rather pointed lobe.

Length: 5.1 to 6.5 mm.

Discussion.—The male holotype and five male and one female paratypes are in the U.S. National Museum; the former bears type number 69095. The data on these seven specimens follows: "Brewster Co., Tx., Chisos Mts., VI, 10–12–08, Mitchell and Cushman Coll."

The Mexican species *maculipennis* Suffrian is similar to *s. conjungens*. They differ in that the humeral and posthumeral spots of the elytra of *s. conjungens* unite to form a pipe-shaped spot; those of *maculipennis* do not meet or join to form an elongate spot. Also *maculipennis* has a small subhumeral spot; *s. conjungens* does not. The *maculipennis* series consists of ten specimens.

Collection records list the host as *Salvia*, and *Salvia vinacea* Wooten & Stanley.

Distribution.—The 27 specimens in the USNM collection are all from Texas.

Cryptocephalus simulans eluticollis Schaeffer

Figure 48

Cryptocephalus simulans eluticollis Schaeffer, 1934, p. 460.

Pronotum: Orange to light orange with a dark red spot at each side and two elongate, oblique basal spots; broad lateral margin and narrow apical margin distinctly to somewhat lighter; margins sometimes vague. Punctation much as that of *s. simulans* but larger punctures a little larger, coarser.

Elytra: Light orange, markings dark red to brownish, much as those of *s. simulans*, usually more vague and less developed; apical spot on second interval rather vague to absent. Punctation as that of *s. simulans*.

Prosternum: Anterior margin in both sexes produced ventrally into a distinct, broad rather pointed lobe.

Length: 5.0 to 5.8 mm.

Discussion.—The three type specimens are in the U.S. National Museum and were taken at Hot Springs, Arizona, by Barber and Schwarz, the male holotype on "21.6" and one male, one female paratypes on "28.6." The holotype has been assigned number 69096.

By its description and illustration, the Mexican species *C. forreri* Jacoby (1889, p. 106) seems closely related to *s. eluticollis* (if not synonymous with it). A specimen in the collection determined by Monros as *forreri* is nearly identical with *s. conjungens*. I believe that

an examination of the type of *forreri* is needed to establish its relation to the subspecies of *simulans*.

DISTRIBUTION.—The six specimens in the U.S. National Museum are all from Arizona.

Cryptocephalus snowi Schaeffer

FIGURE 63

Cryptocephalus snowi Schaeffer, 1934, p. 461.

Pronotum: Red to dark red, light markings creamy yellow to light orange, rather sharply delimited. Light markings as follows: two elongate, oblique basal spots that are narrowly joined; a broad lateral margin (narrowed by an arm of central dark area); and a narrow apical margin. Punctation dual, larger punctures minute to small; at side with an irregular depression.

Elytra: Creamy yellow to light orange, dark markings and punctures dark red, sharply delimited. Dark markings of each elytron as follows: on entire second interval, on fourth interval interrupted once before apex, at basal third of sixth and seventh intervals (including humerus), with anteapical and apical spots on seventh interval; and a basal spot on eighth stria. With eight rows of punctures (could be interpreted as seven) sixth and seventh rows interrupted medially, both more or less confused, sixth much reduced; punctures a little larger than usual, finer to apex; inner and outer rows distinct at apex, usually clearly meeting.

Prosternum: Anterior margin in both sexes produced into a slight lobe.

Length: 4.8 to 5.4 mm.

DISCUSSION.—Two female type specimens are in the U.S. National Museum labeled, "Douglas Ariz. Aug. F. H. Snow." Though neither bears Schaeffer's determination or any indication by him as to which he intended to be the type, one has a museum type label, and the other a museum paratype label. I accept the former as the holotype and have assigned it type number 69079. The paratype bears the additional data "San Bernardino Ranch 3750 ft." The original description mentions the type and paratype in Schaeffer's collection and paratypes deposited in the Kansas University; it is not known how many specimens are in the latter series.

DISTRIBUTION.—The six USNM specimens are from Texas, New Mexico, and Arizona.

Cryptocephalus spurcus spurcus Leconte

FIGURES 91, 135

Cryptocephalus spurcus Leconte, 1859, p. 84.

Pronotum: Orange to reddish, often clouded with blackish, especially

basally each side; usually with two basal oblique spots; lateral and apical margins vaguely lighter. Punctation dual, smaller punctures minute and dense, larger punctures very small to (infrequently) rather small and coarse.

Elytra: Orange to reddish, second, fourth, and sixth intervals usually wholly or in part vaguely to distinctly darker to nearly black; with seven distinct and even rows of punctures and a short series behind humerus; punctures fine and dense, often a little larger than usual, usually finer to apex; inner and outer rows distinct to apex, nearly or quite meeting.

Prosternum: Anterior margin in male produced ventrally into a distinct, more or less pointed lobe; anterior margin in female produced ventrally into a broad, sometimes pointed lobe.

Length: 4.0 to 6.0 mm.

Discussion.—B. E. White (1937, p. 112) recorded this species on *Isocoma* sp.

Distribution.—The U.S. National Museum has 29 specimens; they are from California, New Mexico, and Texas.

Cryptocephalus spurcus vandykei B. E. White

Figure 92

Cryptocephalus spurcus vandykei B. E. White, 1937, p. 112.

Pronotum: Background color light orange (infrequently yellowish), usually with discal and lateral brown to black markings, not sharply delimited, quite variable in development. At one extreme, pronotum black and only lateral and apical margins light; at other extreme, with basal and lateral brownish markings. Punctation dual, smaller punctures minute and moderate in density, larger punctures small and not coarse to moderate and rather coarse.

Elytra: Background color light orange, infrequently yellowish, with brown to (usually) black vittae on second, fourth, and sixth intervals, variable in development. At one extreme, with vittae brownish to black and apex of first, and bases of second and third vittae lighter. At other extreme, with dark vittae expanded, in most areas not sharply delimited, with only following areas light: bases of sutural and first intervals, basal half of fifth interval, most of seventh interval (clouded below humerus), and base of marginal interval; apical half of third, fifth, and marginal intervals clouded with brownish to blackish. With seven rows of fine, close, generally regular punctures and a short series behind humerus; fifth and sixth rows often a little irregular to somewhat confused; punctures smaller to apex as usual; inner and outer rows distinct at apex to a little irregular, usually meeting.

Ventral surface: Prosternum and mesosternum and (sometimm) abdomen dull orange and often clouded with blackish; metasternues

usually light at center, dark to black at side; metepisternum dark brownish to (usually) black; abdomen usually black, with sides, apex, and center at base more or less light; legs irregularly dull orange to irregularly light to dark brownish, sometimes yellowish evident; anterior margin of prosternum in male produced ventrally into a V-shaped lobe, that in female produced into a broadly U-shaped lobe.

Length: 4.2 to 5.5 mm.

Discussion.—Two paratypes of this subspecies are in the U.S. National Museum, and I have seen a third paratype from the Burdette White collection. Of those in the USNM collection, one is a male, the other a female; both bear the following data, "Carpintaria, California, VII–2–36, *Isocoma venetus vernoniodes*, B. E. White collector." The third paratype from the B. E. White collection (in the California Academy of Sciences) is a male and has the same data as above.

In addition to the specimens enumerated, I have seen ten from Utah (eight from St. George, Pine Valley, Mt. Carmel, Beaver Valley, Bellevue, "Bucksk. Valley," and Cedar City) and California (two from Santa Cruz) which I cannot definitely assign to this subspecies. They differ in that the pro- and mesosterna are predominantly black or dark and the legs are irregularly dark brown to completely black. The color of the dorsal surface shows the same pattern and variation as that of *spurcus vandykei*. More complete series may show the advisability of recognizing these as a new subspecies of *spurcus*, a move which I do not now feel justified in making.

A single specimen in the USNM collection from Parada, Mexico determined as *C. semimarginatus* Jacoby is similar to *s. vandykei* but lacks the dark vitta present on the second elytral interval of *s. vandykei*.

Distribution.—The 19 specimens I have seen are from California, Utah, Arizona, New Mexico, Colorado, and British Columbia.

Cryptocephalus striatulus Leconte

Figure 38

Cryptocephalus striatulus Leconte, 1880, p. 204.

Pronotum: Dull light orange, sometimes vaguely clouded with blackish; surface usually alutaceous, punctation not or obscurely dual (small punctures usually not visible), larger punctures quite large and coarse.

Elytra: Dull light orange, sometimes vaguely to distinctly clouded with blackish (no pattern evident). With nine rows of even, never confused punctures (excepting those of apex); punctures a little larger, denser than usual, finer at elytral apex; inner and outer rows usually distinct at apex, sometimes clearly meeting, often obscured by confused punctures and not meeting.

Prosternum: Anterior margin in both sexes not produced, evenly arcuate.

Length: 2.0 to 2.4 mm.

Discussion.—The concavity of the fifth abdominal segment of the female is not as well developed in this species as in other members of the genus.

Distribution.—The 27 USNM specimens are from Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, District of Columbia, and Iowa. Leconte's type specimens were from Illinois and Virginia. Wilcox (1954, p. 383) recorded this species from Ohio.

Cryptocephalus texanus Schaeffer

Figure 61

Cryptocephalus texanus Schaeffer, 1933, p. 323.

Pronotum: Light orange with four broad longitudinal dark red to black vittae, rather sharply delimited, not, or narrowly touching. Punctation usually dual, smaller punctures sparse to absent, larger punctures small to moderate and somewhat coarse.

Elytra: Light orange, each elytron with six dark red to black markings, basal two largest, outer four smaller and subequal. Dark markings of each elytron as follows: first spot at basal portions of intervals two, three, and four, and extending along interval two to nearly middle of elytron, often attaining suture at this point; second spot centered just behind humerus, smaller than inner spot; anteapical spots centered behind middle of interval four and behind middle of interval seven; apical spots centered at apex of fourth and seventh intervals; markings often somewhat expanded or reduced. With seven rows of punctures (in some apparently eight), rows five and six confused (when apparently eight rows, five, six, and seven confused); punctures usually pigmented, usually larger, always denser than usual, finer to apex; inner and outer rows distinct at apex, usually clearly meeting.

Posternum: Anterior margin in female feebly to somewhat produced ventrally into a lobe; male not examined.

Length: 5.0 to 5.8 mm.

Discussion.—Three female type specimens are in the U.S. National Museum; one bears Schaeffer's determination label and is thereon designated as type. I have accepted this specimen as the holotype and assigned it type number 69098 (though a museum notation refers to the other two specimens as cotypes). All three specimens bear the label data "N. Braunfels Tex."

Distribution.—The five USNM specimens (including the types) are all from Texas.

Cryptocephalus tinctus Leconte

FIGURE 37

?*Cryptocephalus fasciatus* Say, 1824, p. 437.
Cryptocephalus tinctus Leconte, 1880, p. 203.

Pronotum: Light orange to reddish (sometimes clouded with darkish), sometimes with margins and scattered areas yellowish, punctures often more darkly pigmented. Usually with dual punctation, smaller punctures often obscure to very sparse, larger punctures quite large, coarse.

Elytra: Light orange, each elytron usually with three vague to rather distinct, darker orange to reddish, transverse, undulating bands. Dark bands arranged as follows: one basal, one behind middle, one apical and narrow, often bands expanded and nearly meeting. With nine sometimes slightly irregular rows of punctures, occasionally rows six and seven confused; punctures a little larger, denser than usual, slightly finer to apex; inner and outer rows obscured at apex by confused punctures.

Prosternum: Anterior margin in male produced into a short, usually pointed lobe; anterior margin in female not produced to feebly, broadly produced.

Length: 2.8 to 4.5 mm.

DISCUSSION.—*C. fasciatus* has long been considered a possible synonym of *lateritius*, but unfortunately the description of *fasciatus* does not allow it to be placed with certainty. The locality of collection was given by Say as the Konza River, Missouri; this fits more closely with the distribution of *tinctus* (quite similar morphologically to *lateritius*) than it does with the distribution of *lateritius*. On that basis, I consider it more likely a synonym of *tinctus* than *lateritius*. *C. lateritius* is known only from Florida, Georgia, and North Carolina; see below for the distribution of *tinctus*.

DISTRIBUTION.—The USNM collection has 28 specimens from Massachusetts, New Jersey, New York, District of Columbia, Pennsylvania, North Carolina, Virginia, South Carolina, Iowa, and Kansas.

Cryptocephalus triundulatus, new species

FIGURES 110, 137

General: Body 1.7 times as long as wide; dorsal surface rather shining, elytra less so than pronotum; dorsal surface without pubescense; most of ventral surface with short, sparse pubescence.

Head: Front and clypeus creamy yellow, an inverted V from vertex to antennal insertions and labrum reddish; front with moderate-sized, rather coarse punctures; clypeus with basal margin obsolete,

lateral margins rather distinct, broad, somewhat broader apically than at base. Antennae in female over half length of body, in male about three-fourths length of body; basal two to five segments orange, remainder blackish.

Pronotum: Deep orange to red, usually with two vague, yellowish spots at base; lateral margin narrowly to rather broadly yellowish, this narrowly interrupted by red at middle; apical margin narrowly yellowish. Punctation dual, smaller punctures minute, larger punctures small, not dense.

Elytra: Background color creamy yellow to light orange; dark markings brown to black, rather sharply delimited; each elytron with three transverse, dark, undulate bands, all broadly confluent with suture, first centered at basal third, attaining neither base nor lateral margin, second centered behind middle, attaining lateral margin, third centered before apex, not attaining lateral margin. Each elytron with seven rows of punctures, usually with an incomplete row between fifth and sixth; fifth and sixth rows usually confused; punctures small, dense as usual, finer to apex; inner and outer rows distinct at apex and clearly meeting.

Ventral surfaces: Ventral surface and legs orange to light reddish, legs brownish apically; with yellowish on prosternum, mesosternum, mesepimeron, middle of first abdominal segment at base, and sides of abdominal segments. Anterior margin of male prosternum feebly produced into a broad, arcuate lobe or in female not produced and evenly arcuate. Pygidium yellowish apically, with median line, sides, and basal half orange or reddish; with a feeble, median carina; coarsely punctate. Fifth abdominal segment in female with a large, oval, deep depression at center as usual or in male feebly depressed.

Length: 4.0 to 4.4 mm.

Type data.—The male holotype bears USNM type number 69243 and the data "Tucson, Arizona, Wickham, August 4, Wickham collection 1933." The allotype bears the data "on catclaw 15 mi. N. of Presidio Tx. 29.4.47 J. H. Russell." The single female paratype has the following: "Aug. 5–7 Tucson, Arizona, Wickham, Wickham collection 1933." All types are in the U.S. National Museum.

Discussion.—The species is most similar to *cowaniae* and can be distinguished from it by the elytral pattern. In *cowaniae*, the dark elytral markings are mutually confluent lateral to the elytral suture; in this species, they are not confluent (first and second bands) or meet only at the suture (second and third, sometimes first and second). The specific name refers to the three undulate bands of the elytra.

Cryptocephalus trivittatus Olivier

FIGURES 10, 50

Cryptocephalus trivittatus Olivier, 1808, p. 824.
?*Cryptocephalus lixus* Newman, 1840, p. 250.
Cryptocephalus vittatus Haldeman, 1849, p. 250 [preoccupied, original spelling *vitatus*].

Pronotum: Creamy yellow to light orange, with three rather broad, more or less distinct, longitudinal, red to nearly black vittae; median vitta broadest at its middle, lateral two broadest at their base. Punctation usually dual; surface often alutaceous, obscuring smaller punctures; larger punctures small to moderately large and coarse.

Elytra: Creamy yellow to light orange, usually with red to nearly black markings as follows: at basal fourth of third interval (often reduced to absent), at middle of fifth interval to apex; entire sixth and seventh intervals from base to apex (sometimes reduced, rarely indicated only at base). With eight rows of often pigmented punctures; sixth and seventh rows confused; punctures often a little larger, denser than usual, finer at elytral apex; inner and outer rows at apex distinct, uniting clearly.

Prosternum: Anterior margin in both sexes not produced, nearly evenly arcuate throughout.

Length: 3.3 to 4.3 mm.

DISTRIBUTION.—The 43 individuals in the U.S. National Museum are from Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Maryland, Virginia, South Carolina, Florida, Alabama, Illinois, Iowa, and Texas. A single specimen represents the Texas record; it is from College Station; this record could be in error.

Cryptocephalus trizonatus Suffrian

FIGURE 19

Cryptocephalus tricinctus Suffrian, 1852, p. 34 [preoccupied].
Cryptocephalus trizonatus Suffrian, 1858, p. 372.

Pronotum: Light orange with a transverse, sharply delimited, red to nearly black band, pointed on each side, nearly or quite attaining lateral margin.

Elytra: Light orange, each elytron with two broad, transverse bands and apical tip red to dark red; dark bands sharply delimited, leaving usually narrower orange bands at base, middle, and before extreme apex. With seven or eight rows of pigmented punctures, fourth to eighth rows often reduced, especially within median orange band; punctures larger, sparser than usual, finer at elytral apex; inner and outer rows distinct at apex, clearly meeting.

Prosternum: Anterior margin in male rather distinctly produced into a usually pointed lobe; anterior margin in female rather weakly produced into a broad lobe.

Length: 3.0 to 4.6 mm.

Discussion.—In my opinion, Jacoby (1889, p. 108) has, at least in part, misapplied the name *trizonatus*. In the discussion, he mentions that the thoracic band in some specimens is connected with the base by a narrow streak on each side, and the illustration (Table 3, figure 8) is of such an individual. I believe that this represents a species similar to but distinct from *trizonatus*, because in our Central American series, I find individuals that agree with this description that are consistently different from *trizonatus* in this character, and this character shows no indication of being variable. I am unable to determine whether this species is described.

A single collection note refers to a specimen taken on "*Anacua.*"

Distribution.—The 45 specimens in the U.S. National Museum are all from Brownsville, Texas.

Cryptocephalus umbonatus Schaeffer

Figure 68

Cryptocephalus umbonatus Schaeffer, 1906, p. 232.

Pronotum: Light orange to red completely or in part, disk often more darkly pigmented; punctation dual, larger punctures small to moderate and coarse.

Elytra: Light orange to orange, humerus and striae red to black, with no markings. With eight rows of punctures (rarely with seven) fifth and seventh rows more or less confused, sixth row quite confused; punctures denser, more distinctly impressed than usual, a little finer to apex; inner and outer rows distinct, usually clearly uniting at apex.

Prosternum: Anterior margin in male strongly produced into a pointed, ventrally directed lobe; anterior margin in female produced into a short, broad lobe.

Length: 4.0 to 6.0 mm.

Discussion.—Five cotypes are in the U.S. National Museum (one male, four females) and all bear the type number 42308; they were taken at Palmerly, Cochise County, Arizona. The single male (collected in July) bears Schaeffer's determination label and is hereby designated as lectotype. Three of the remaining types were taken in July, one on July 15; the other two bear no exact date. One type was taken on June 14. The original description gives the locality of collection as Huachuca Mountains, Arizona.

In the types and in many of the other specimens on hand, the elytra are waxy yellow, and the striae black and strongly contrasting

with the background. In nearly half the other specimens, however, the elytra are rather to quite orange, and the striae partly to completely dark reddish and less strongly contrasting with the background. At the extreme, the elytra match the orange color of the pronotum.

DISTRIBUTION.—All the 46 specimens in the U.S. National Museum are from Arizona.

Cryptocephalus vapidus, new species

FIGURES 111, 136

General: Body 1.75 to 1.80 times as long as wide; dorsal surface shining, lacking pubescence; most of ventral surface with short, sparse, whitish pubescence.

Head: Dull light orange, antennal insertions darker orange, front evenly, moderately, densely punctate; vertex shallowly grooved or depressed; clypeus sharply delimited, distinctly broadest apically. Antennae nearly as long as body in male, or nearly two-thirds as long as body in female; dull light orange.

Pronotum: Dull light orange, with generally distinct, fine, darker speckling which is absent basally at center, anteriorly on each side, and at apex. Punctation dual, smaller punctures minute and sparse, larger punctures small to very small, not coarse.

Elytra: Dull light orange; each elytron with distinct to vague indications of two dull reddish, transverse, undulate bands; humerus dull reddish; punctures dark reddish. Each elytron with nine even and distinct rows of close, fairly large punctures; rows seven and eight behind humerus nearly always interrupted and joining each other; punctures distinct to apex, somewhat smaller apically; inner and outer rows at apex distinct and clearly meeting.

Ventral surface: Ventral surface and appendages dull light orange, apices of femora light; metasternum reddish. Anterior margin of metasternum in male broadly produced ventrally into a V-shaped pointed lobe; anterior margin in female broadly produced ventrally into a blunt lobe. Fifth abdominal segment in female at center with a deep oval depression, or fifth segment feebly depressed in male.

Length: 3.5 to 4.8 mm.

TYPE DATA.—The species is represented by 57 individuals, all taken by D. J. and J. N. Knull in the Chiricuhua Mountains of Arizona, except for one from the Patagonia Mountains of Arizona. The male holotype (taken on August 7, 1959) and the allotype (taken on July 27, 1953), are in the OSU collection. The dates on the paratypes and their numbers are as follows: VI–15–39 (one male), VI–27–49 (one male), VII–20–53 (one male, one female), VII–22–53 (one male), VII–27–53 (two females), VIII–3–55 (Patagonia Mts., one female),

VII–24–55 (one male, one female), VII–29–55 (two males, one female), VII–17–57 (one female), VII–27–57 (one male, one female), VII–2–59 (four males, four females), VII–9–59 (five females), VII–23–59 (one female), VII–30–59 (one male, one female), VIII–7–59 (four males, five females), VIII–15–59 (one female), VII–3–61 (one female), VII–7–61 (one female), VII–5–61 (one female), VII–5–61 (one male, one female), VII–18–61 (one female), VII–22–61 (one male, one female), VII–29–61 (one male), VIII–2–61 (two females), VIII–6–61 (one female), VIII–18–61 (two males). Most of the specimens are in Ohio State University, but the last five are in the U.S. National Museum.

Discussion.—The species is similar to the description of *C. obscuripennis* Jacoby (1880, p. 54) described from Guatemala. In *vapidus*, the antennae are orange throughout; those of *obscuripennis* are described as having the terminal segments black. The name *vapidus* (meaning dull) refers to the body color of this species.

***Cryptocephalus venustus venustus* Fab.**

Figures 86, 139

Cryptocephalus venustus Fab., 1787, p. 79.
Cryptocephalus flaccidus Suffrian, 1852, p. 239.

Pronotum: Orange to dark red, nearly always with two light, oblique basal spots, lateral and apical margins vaguely lighter, generally creamy yellow to light orange; light markings and margins never sharply delimited; punctation dual, larger punctures small to moderate in size, always coarse.

Elytra: Creamy yellow to light orange, each elytron with two dark red to (usually) black, nearly always distinct vittae from base of second, third, and fourth intervals to apex of second interval and from humerus to apex of fourth to seventh intervals; infrequently dark markings vague, reduced, or interrupted, rarely somewhat expanded. With nine rows of punctures (sometimes apparently eight), rows five to eight crowded, one or more often confused or reduced; punctures as large, dense as usual, finer at elytral apex; inner and outer rows distinct at apex, nearly always clearly meeting.

Prosternum: Anterior margin in male produced ventrally into a distinct, stout spine; anterior margin in female produced into a broad, short, pointed lobe, often spinelike.

Length: 4.1 to 6.0 mm.

Discussion.—The series of *v. venustus* before me contains the male of *v. simplex* and probably also the male of *v. ornatulus* (see notes under these subspecies). The single specimen I know to be a male of *v. simplex* (collected in copula), I find to be indistinguishable from

males of *v. venustus;* I have recognized no males of *v. ornatulus* but think it quite likely that it is also nearly or quite identical to *v. venustus.*

Cleared male genitalia of *v. venustus, v. cinctipennis, v. hamatus,* and *v. simplex* have been compared and found to be essentially identical.

A few individuals have the elytra (exclusive of the dark vittae) clouded with reddish; these are connected with the normal condition by intermediates.

One specimen was taken on *Sapium sebiferum* Rayb. (*"Sapium sebicerum"*).

The essentially sympatric distribution of the subspecies of *venustus* is disturbing. Obviously the situation is at variance with generally held views regarding the nature of subspecies. Temporal factors or behavior differences, however, might interpose a degree of reproductive isolation between the populations treated here as subspecies. In the cases of *v. ornatulus* and *v. simplex,* in which only females are known to exhibit the distinctive color patterns, sex-linked allelomorphism may be involved. Only experimental studies will completely clarify these problems. In the absence of such investigations, no certain conclusions can be reached concerning the significance of the differences in the color pattern in *venustus.* Although recognizing that the present arrangement is not satisfactory, I prefer to retain the names as subspecies. Appropriate changes can be made at such time as solid evidence indicates the need for a different treatment.

Distribution.—The U.S. National Museum contains a series of 316 specimens taken from Manitoba, Quebec, Connecticut, Massachusetts, New York, New Jersey, Maryland, Pennsylvania, Virginia, North Carolina, Florida, Tennessee, Kentucky, West Virginia, Ohio, Illinois, Indiana, Michigan, Louisiana, Mississippi, Missouri, South Dakota, Kansas, Iowa, Nebraska, Minnesota, Colorado, and Texas. A single specimen has California as the locality of collection; likely this is in error.

Cryptocephalus venustus cinctipennis Randall

Figure 84

Cryptocephalus cinctipennis Randall, 1838, p. 45.

Pronotum: Color similar to *v. venustus* but with light markings more frequently absent; punctation as in *v. venustus.*

Elytra: Disk dark red to (usually) black; marginal interval and often adjacent interval in part creamy yellow, usually to apex, but sometimes only at side; disk sometimes more or less yellowish at base and/or near scutellum; punctation as in *v. venustus.*

Prosternum: as in *v. venustus.*

Length.—4.1 to 5.2 mm.

Distribution.—The 85 specimens in the U.S. National Museum are from Manitoba, Connecticut, Massachusetts, New Hampshire, New York, Maryland, Illinois, Ohio, Michigan, Wisconsin, Missouri, Mississippi, Iowa, Kansas, Nebraska, and Colorado.

Cryptocephalus venustus hamatus Melsheimer

Figure 85

Cryptocephalus hamatus Melsheimer, 1848, p. 173.

Pronotum: Color as *v. cinctipennis;* sculpture as *v. venustus.*

Elytra: Eighth and marginal intervals creamy yellow. Dark markings variable, basically as a *v. venustus* in which dark markings of each elytron expand and meet each other or suture or both; at one extreme, with discal markings as *v. venustus,* but those normally light areas creamy yellow and clouded with reddish; at other extreme, disk entirely dark, base, suture, and apex distinctly or vaguely yellowish; striae as *v. venustus.*

Prosternum: As in *v. venustus.*

Length: 4.0 to 5.5 mm.

Discussion.—This is the most poorly differentiated of the recognized subspecies of *venustus.* Usually there is a scutellar and/or second diagonal band of yellow on each elytron. Rarely is one of these complete; usually one or the other is incompletely or weakly indicated. There is nearly a continuous range of intermediates between this subspecies and *v. cinctipennis.* In *v. cinctipennis,* the entire elytral disk is usually black. I am taking a conservative approach in letting *v. hamatus* stand as is.

Distribution.—There are 24 specimens in the U.S. National Museum, and they are from Massachusetts, New York, New Jersey, Maryland, Virginia, Ohio, Illinois, Michigan, Wisconsin, Iowa, South Dakota, and Colorado. Douglass (1929, p. 8) recorded this subspecies from Kansas.

Cryptocephalus venustus ornatulus Clavareau

Figure 87

Cryptocephalus ornatus Fabricius, 1798, p. 106 [preoccupied].
Cryptocephalus ornatulus Clavareau, 1913, p. 194.

Pronotum: Orange to dark red, lateral and apical margins lighter or yellowish, sometimes with two vague, oblique light basal spots; sculpture as in *v. venustus.*

Elytra: Creamy yellow to light orange, each elytron with dark red to black markings as follows: entire second interval, base of fourth interval (latter two often joined), at side three subequal spots, one on humerus (always present, rarely expanded or reduced), middle of

eighth interval (often expanded or reduced, rarely absent), at apex of fourth interval (often expanded to reduced or absent). Striae and punctures essentially as *v. venustus* but less frequently with confused or reduced rows.

Prosternum: Anterior margin in female as that of *v. venustus;* male not recognized (likely as in male of *v. venustus*).

Length: 4.8 to 6.0 mm.

Discussion.—All 43 individuals on hand are females. I believe that the males of this subspecies are mixed with specimens determined as *v. venustus* and that they are nearly or quite indistinguishable from *v. venustus* externally. Because of this, the description is based upon the female, and only this sex runs through the key.

Distribution.—There are 43 specimens in the USNM collection, and they are from Manitoba, Pennsylvania, West Virginia, Ohio, Indiana, Iowa, Missouri, Kansas, Colorado, and Texas. Blatchley (1924, p. 53) recorded this subspecies from Florida.

Cryptocephalus venustus simplex Haldeman

Figure 88

Cryptocephalus simplex Haldeman, 1849, p. 249.

Pronotum: Color much as in *v. venustus*, but basal markings more frequently absent; punctation as in *v. venustus*.

Elytra: Creamy yellow to (usually) light orange; female with only a black spot on humerus, infrequently with vague indications of vittae located as in *v. venustus;* male with dark vittae as in typical *v. venustus*. Striae as in *v. venustus*, but less frequently with reduced or confused rows.

Prosternum: Anterior margin as in *v. venustus*.

Length: 4.1 to 5.8 mm.

Discussion.—All but one of the 71 specimens on hand are females. The single male is one of an associated couple collected in copula; it is identical externally as far as I have been able to determine with a male of *v. venustus* also associated in copula with a female of that subspecies. As with *v. ornatulus*, I believe that the remaining males of this subspecies are mixed with specimens determined as *v. venustus*. The male of *v. simplex* represents the lower range of the extremes in length for this subspecies.

Distribution.—The series of 71 specimens in the U.S. National Museum are from New Hampshire, Massachusetts, New York, New Jersey, Maryland, Pennsylvania, Virginia, Ohio, Indiana, Wisconsin, and Minnesota. Douglass (1924, p. 8) recorded this subspecies from Kansas.

***Cryptocephalus virginiensis*, new species**

FIGURES, 18, 109, 140

General: Body 1.8 times as long as wide; dorsal surface moderately shiny, without pubescence; most of ventral surface with short, fine pubescence.

Head: Front and vertex mostly black, with light orange adjacent to each eye and above antennal insertions, clypeus and front below antennal insertions reddish, labrum orange; with large coarse punctures on black area; clypeus with posterior margin distinctly impressed, lateral margins distinct, with apex distinctly wider than base. Antennae of male nearly as long as body, orange throughout.

Pronotum: Predominantly black, with sharply delimited light orange markings at side and apex; light markings at side narrow at base, broader anteriorly; apical markings discontinuous, apically at center with a small light spot, this distinct from narrow light margin at each side. Punctation dual, smaller punctures small, sparse, larger punctures large and coarse, coarsest basally and at sides; surface on each side scabrous; median line narrowly free of punctures and finely carinate posteriorly.

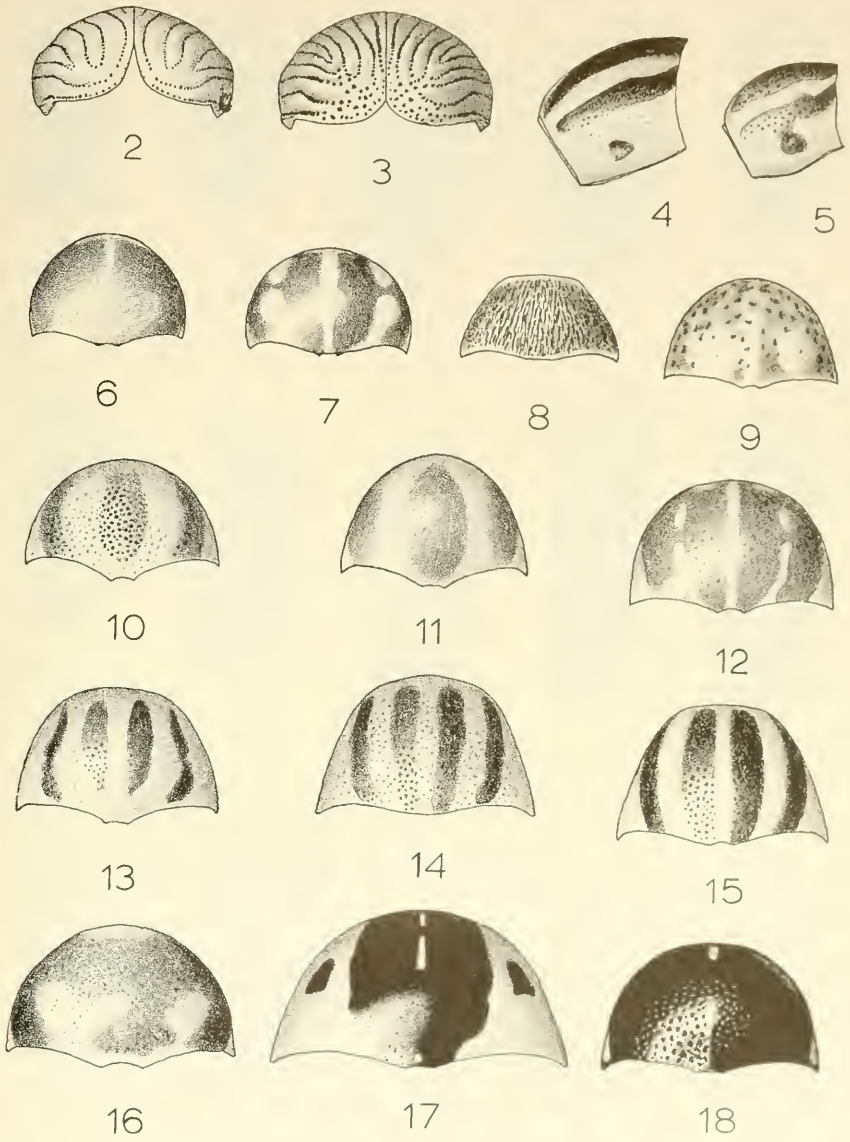
Elytra: Ground color light orange, dark markings black, sharply delimited. Each elytron with three pair of dark spots as follows (basal pair largest): two basal spots, inner larger, second basal spot extending from fifth to eighth stria, not attaining base, ceasing before middle of elytra; second pair centered behind middle of elytron, inner larger, moderate in size, centered on third stria, located about two-thirds of way back, lateral spot small, centered at about middle of eighth interval; apical spots both moderate, one centered before apex of third stria, other before apex of seventh stria. Each elytron with eight rows of large, pigmented, somewhat irregular punctures, these rather sparse, punctures on light areas smaller than others; fifth, sixth, and seventh rows confused; rows distinctly finer at elytral apex; inner and outer rows distinct to apex, not clearly meeting.

Ventral surface: Ventral surface and pygidium black; median line of prosternum light orange; legs reddish orange. Anterior margin of prosternum in male distinctly produced ventrally into a rather pointed lobe; pygidium with very large, coarse punctures.

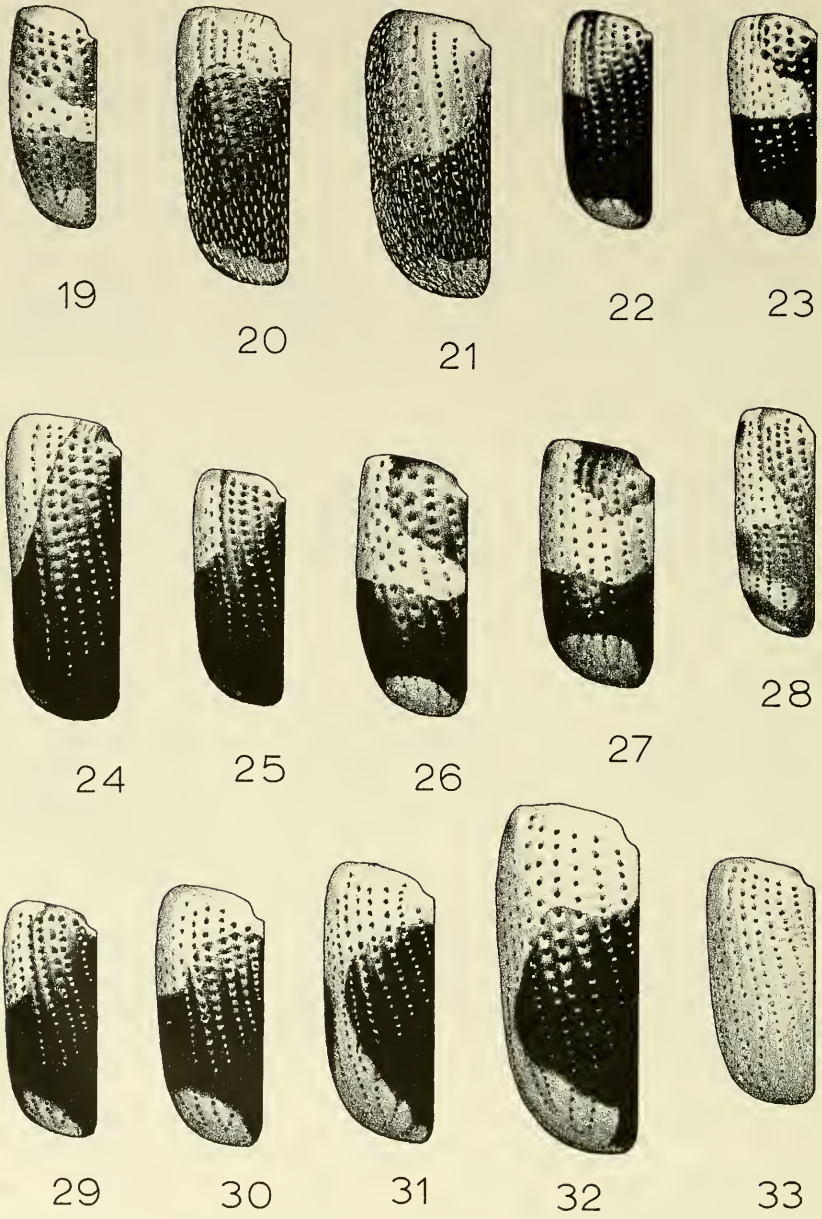
Length: 5.0 mm.

TYPE DATA.—The male holotype is from Cape Henry, Virginia, and was taken on July 20, 1927, by Aug. Busck; it bears the USNM type number 69244.

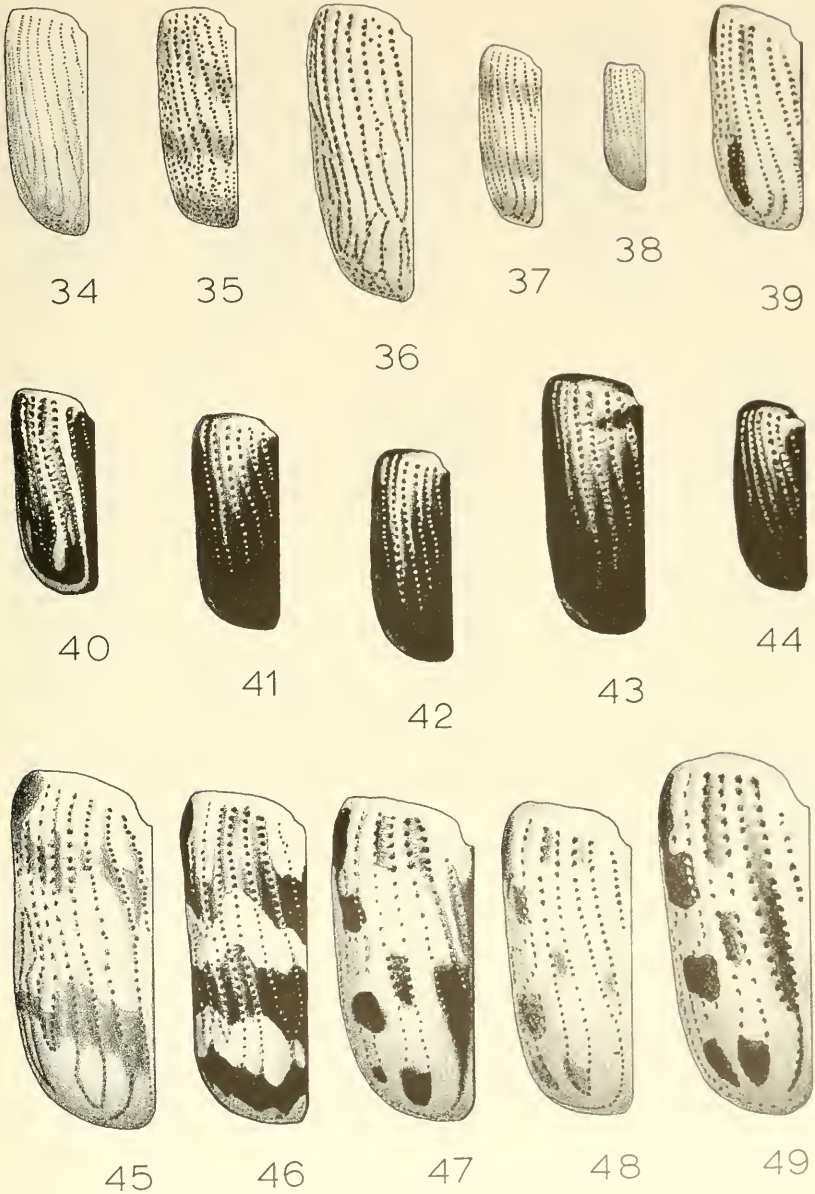
DISCUSSION.—The species is most similar to *cupressi* but is easily distinguished from it. The pronotal disk of *cupressi* bears four longitudinal dark bands; that of *virginiensis* is entirely black. The elytral patterns of dark markings of these two species are nearly identical.



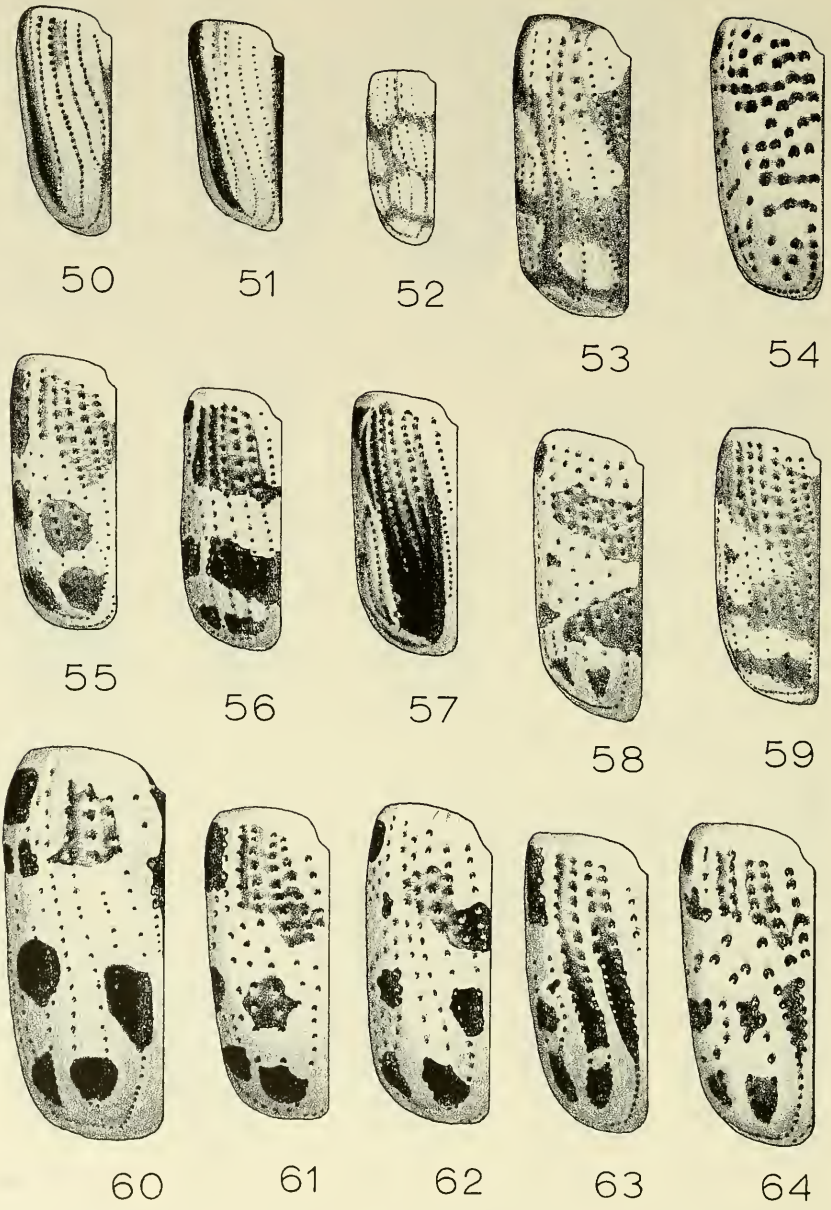
FIGURES 2–18.—Elytral apices, posterior view; pronota in lateral and dorsal views: 2, *C. dorsatus*, new species, male; 3, *C. implacidus*, new species, female; 4, *C. bivius* Newman, female; 5, *C. maccus*, new species, male paratype; 6, *C. amatus fractilineatus*, new subspecies, male holotype; 7, *C. amatus apicedens* Fall, female; 8, *C. schreibersii* Suffrian, female; 9, *C. merus* Fall, female; 10, *C. trivittatus* Olivier, female; 11, *C. cuneatus* Fall, male; 12, *C. castaneus* Leconte, female; 13, *C. binotatus*, new species, male paratype; 14, *C. duryi* Schaeffer, female; 15, *C. leucomelas leucomelas* Suffrian, female; 16, *C. confluentus confluentus* Say, female; 17, *C. egregius* Schaeffer, female; 18, *C. virginiensis*, new species, male holotype.



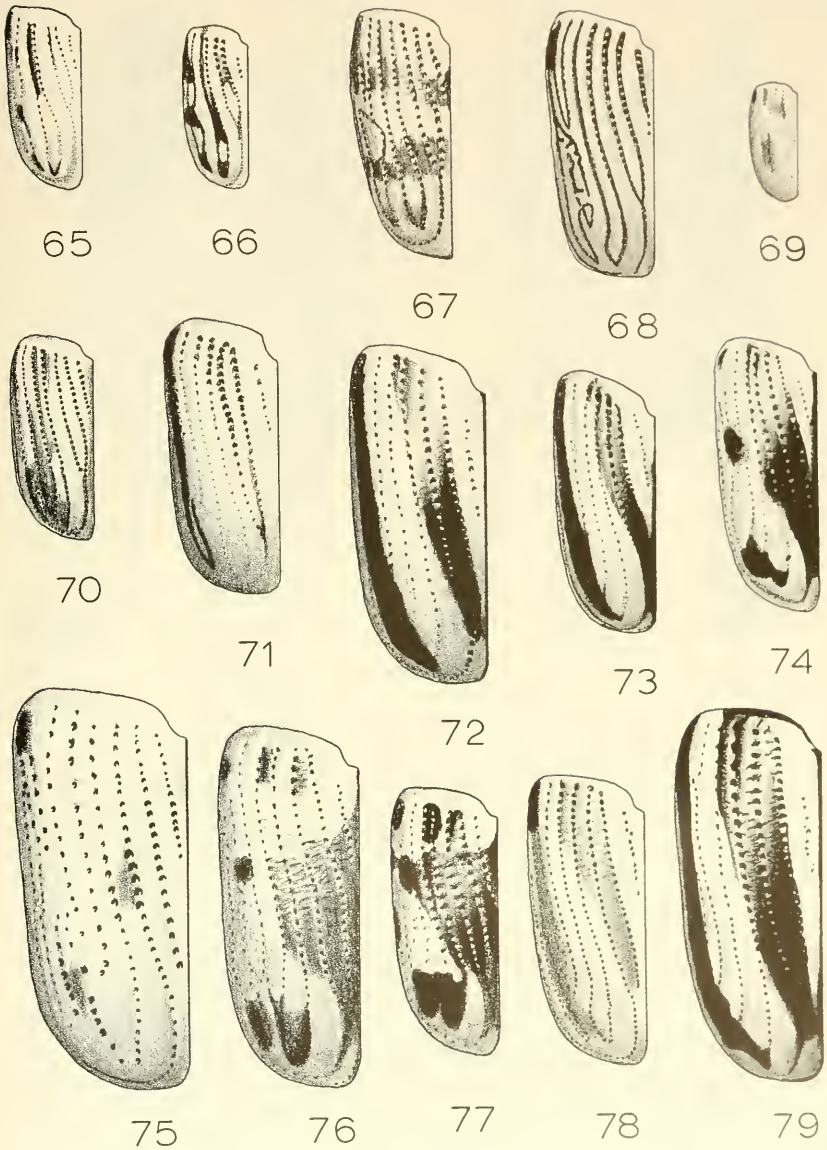
FIGURES 19–33.—Left elytra, dorsal views: 19, *C. trizonatus* Suffrian, female; 20, *C. mucoreus* Leconte, male; 21, *C. basalis* Suffrian, female; 22, *C. quadruplex* Newman, female; 23, *C. quadruplex* Newman, male; 24 *C. pubicollis* Linell, male; 25; *C. pinicola* Schaeffer, female; 26, *C. binominis binominis*, Newman, female; 27 *C. binominis rufibasis* Schaeffer, female; 28, *C. multisignatus* Schaeffer, male; 29, *C. notatus notatus* Fab., male; 30, *C. notatus quadrimaculatus* Say, female; 31, *C. notatus sellatus* Schaeffer, female; 32, *C. pubiventris* Schaeffer, female; 33, *C. notatus fulvipennis* Haldeman, male.



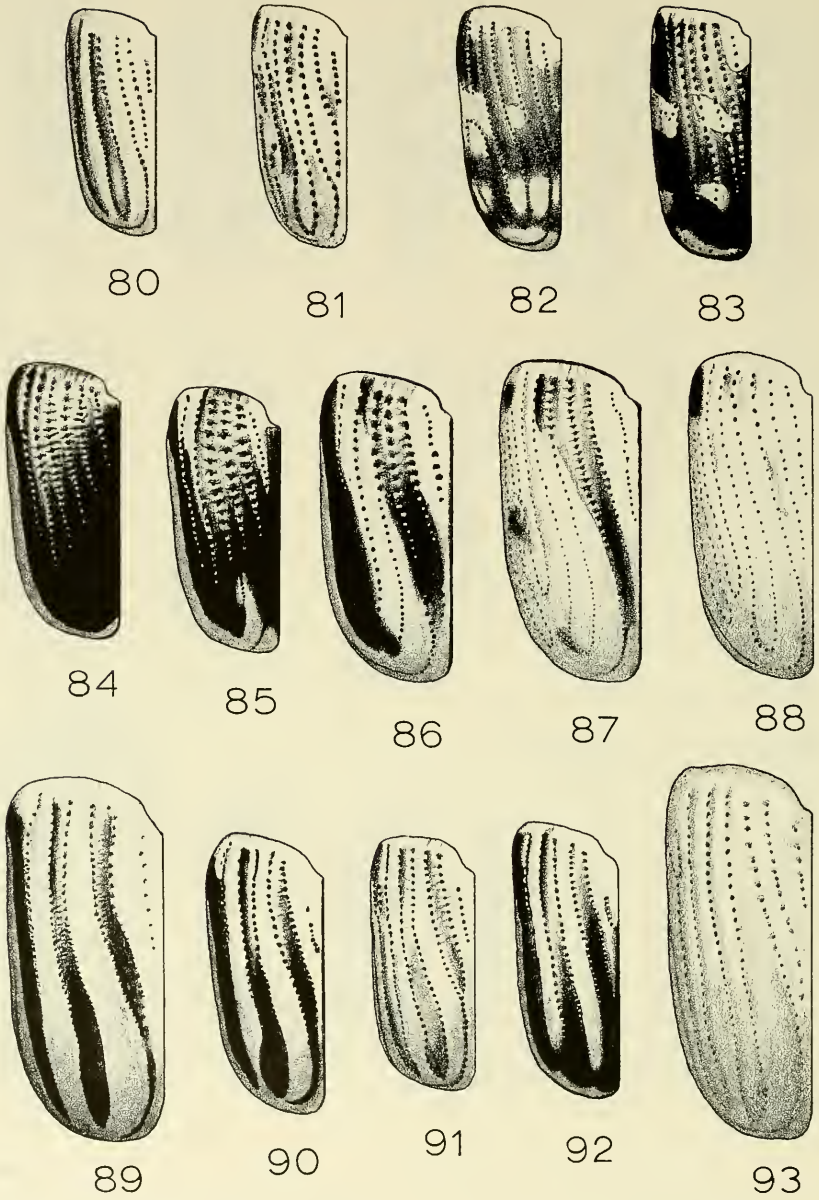
FIGURES 34–49.—Left elytra, dorsal views: 34, *C. schreibersii* Suffrian, female; 35, *C. lateritius* Newman, male; 36, *C. ochraceus* Fall, female; 37, *C. tinctus* Leconte, female; 38, *C. striatulus* Leconte, female; 39, *C. amatus amatus* Haldeman, female; 40, *C. amatus apicedens* Fall, male; 41, *C. sanguinicollis sanguinicollis* Suffrian, male; 42, *C. sanguinicollis nigerrimus* Crotch, male; 43, *C. arizonensis arizonensis* Schaeffer, female; 44, *C. nanus* Fab., female; 45, *C. quercus* Schaeffer, female; 46, *C. atrofasciatus* Jacoby, male; 47, *C. simulans simulans* Schaeffer, female; 48, *C. simulans eluticollis* Schaeffer, female; 49, *C. simulans conjungens* Schaeffer, female.



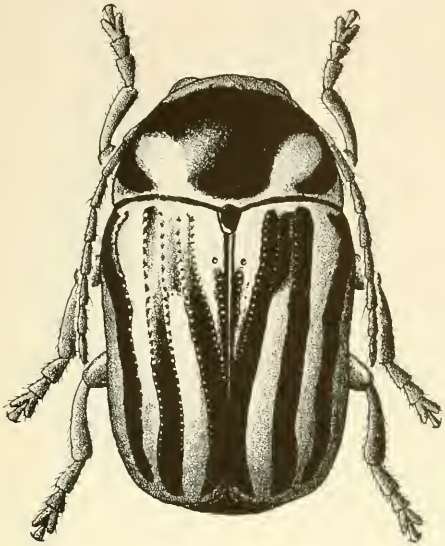
FIGURES 50–64.—Left elytra, dorsal views: 50, *C. trivittatus* Olivier, female; 51, *C. cuneatus* Fall, male; 52, *C. guttulatellus* Schaeffer, female; 53, *C. guttulatus* Olivier, female; 54 *C. duryi* Schaeffer, female; 55, *C. cupressi* Schaeffer, female; 56, *C. castaneus* Leconte, female; 57, *C. castaneus* Leconte, female; 58, *C. leucomelas leucomelas* Suffrian, female; 59, *C. leucomelas vitticollis* Leconte, female; 60, *C. egregius* Schaeffer, female; 61, *C. texanus* Schaeffer, female; 62, *C. bivius* Newman, female, 63, *C. snowi* Schaeffer, female; 64, *C. cribripennis* Leconte, female.



FIGURES 65–79.—Left elytra, dorsal views: 65, *C. defectus* Leconte, female; 66, *C. luteolus* Newman, male; 67, *C. fulguratus* Leconte, female; 68, *C. umbonatus* Schaeffer, male; 69, *C. pumilus* Haldeman, female; 70, *C. incertus* Olivier, female; 71, *C. albicans* Haldeman, male; 72, *C. bispinus* Suffrian, female; 73, *C. calidus* Suffrian, female; 74, *C. insertus* Haldeman, female; 75, *C. aulicus* Haldeman, female; 76, *C. mutabilis* Melsheimer, female; 77, *C. mutabilis* Melsheimer, male; 78, *C. obsoletus obsoletus* Germar, female; 79, *C. gibbicollis gibbicollis* Haldeman, female.



FIGURES 80–93.—Left elytra, dorsal views: 80, *C. brunneovittatus* Schaeffer, female; 81, *C. merus* Fall, female; 82, *C. badius* Suffrian, female; 83, *C. cowaniae* Schaeffer, female; 84, *C. venustus cinctipennis* Randall, male; 85, *C. venustus hamatus* Melsheimer, male; 86, *C. venustus venustus* Fab., female; 87, *C. venustus ornatulus* Clavareau, female; 88, *C. venustus simplex* Haldeman, female; 89, *C. cerinus nevadensis* B. E. White, female holotype; 90, *C. confluentus confluentus* Say, male; 91, *C. spurcus spurcus* Leconte, female; 92, *C. spurcus vandykei* White, female; 93, *C. cerinus cerinus* B. E. White, female



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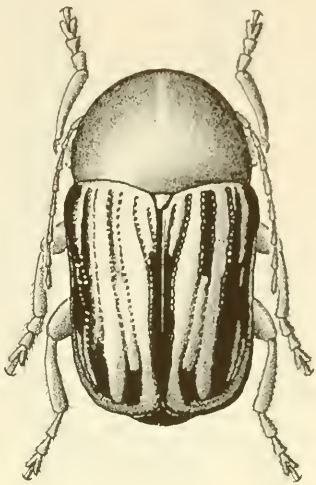

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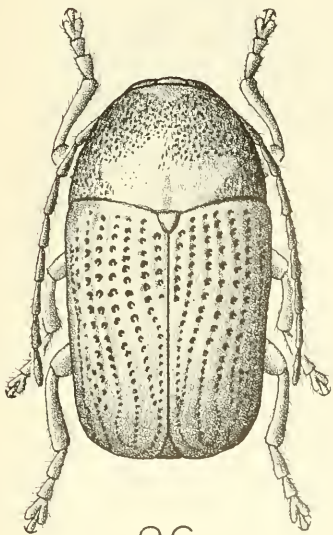

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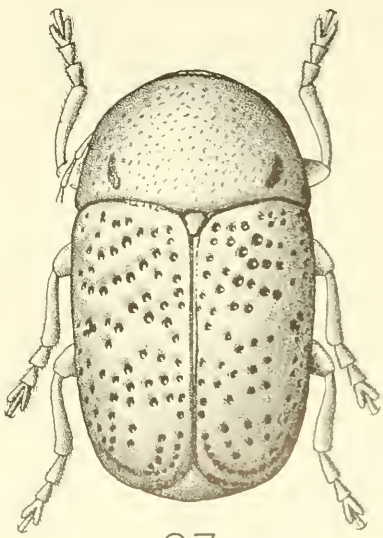

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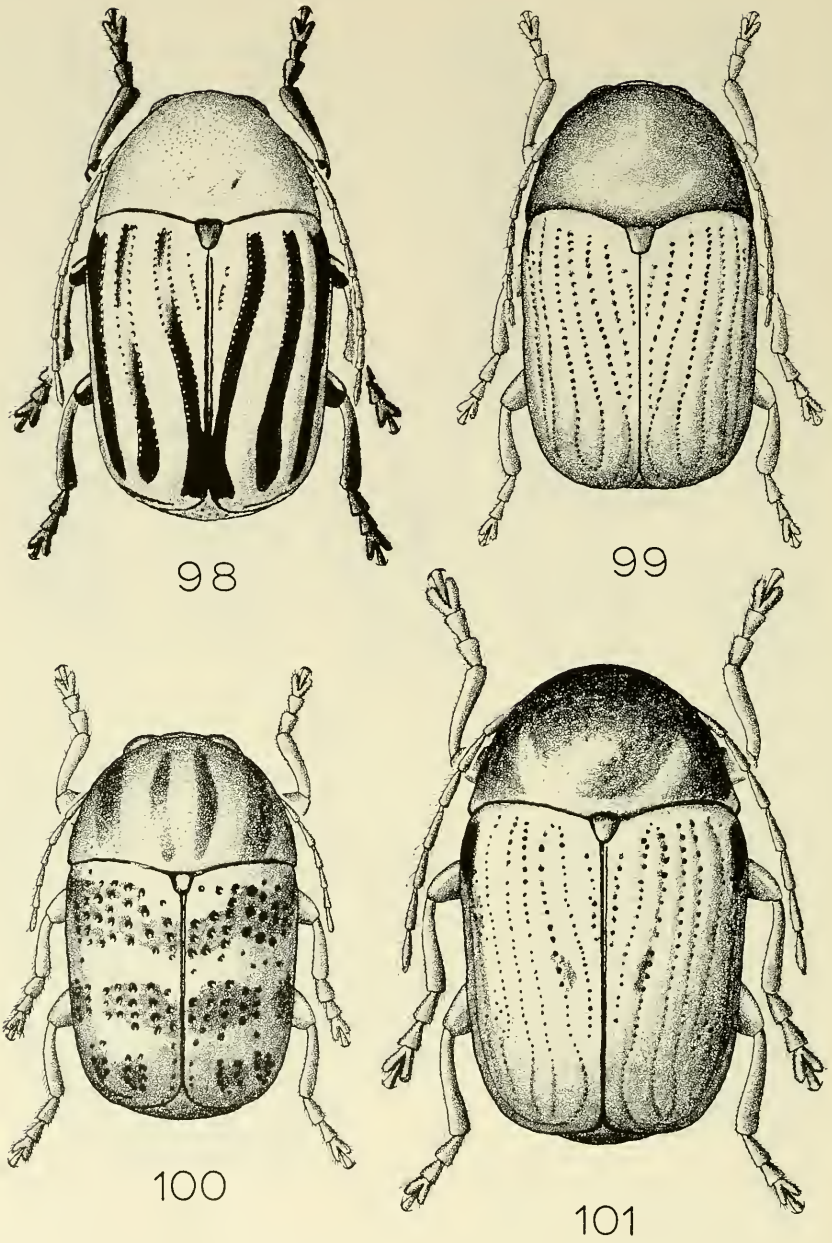
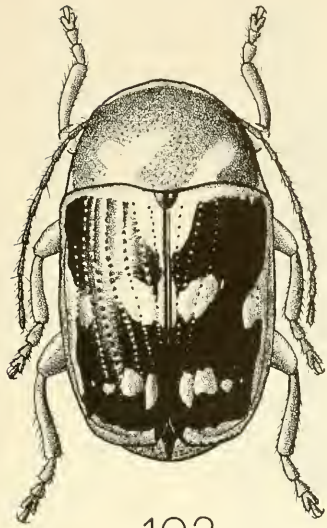
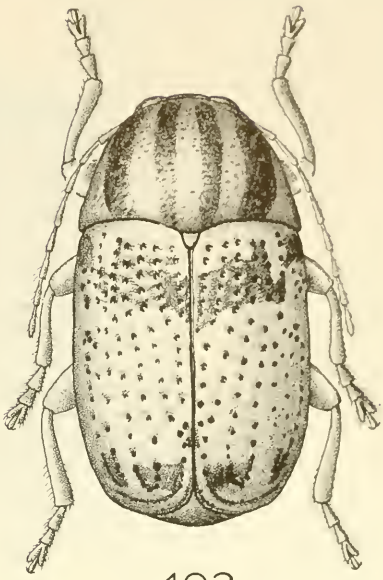
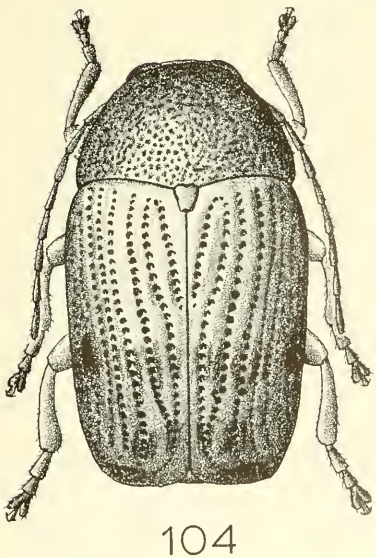
FIGURES 94–97.—Adults, dorsal views: 94, *C. alternans jungovittatus*, new subspecies, male holotype; 95, *C. amatus fractilineatus*, new subspecies, male holotype; 96, *C. astralicus*, new species, male holotype; 97, *C. binotatus*, new species, female holotype.

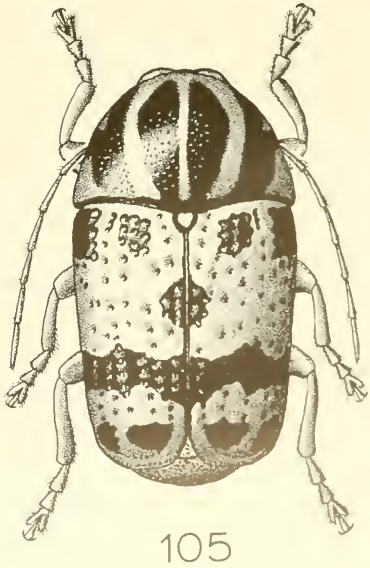


FIGURES 98–101.—Adults, dorsal views: 98, *C. confluentus melanoscelus*, new subspecies, male holotype; 99, *C. dorsatus*, new species, male holotype; 100, *C. disruptus*, new species, male holotype; 101, *C. gibbicollis decrescens*, new subspecies, male holotype

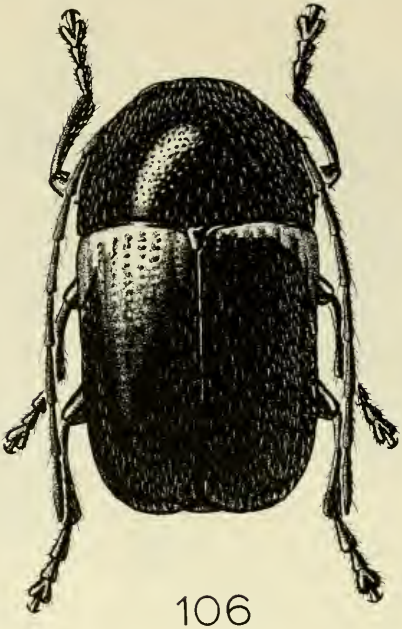








FIGURES 102–105.—Adults, dorsal views: 102, *C. contextus*, new species, female holotype; 103, *C. leucomelas trisignatus*, new subspecies, female holotype; 104, *C. implacidus*, new species, female holotype; 105, *C. maccus*, new species, male holotype.



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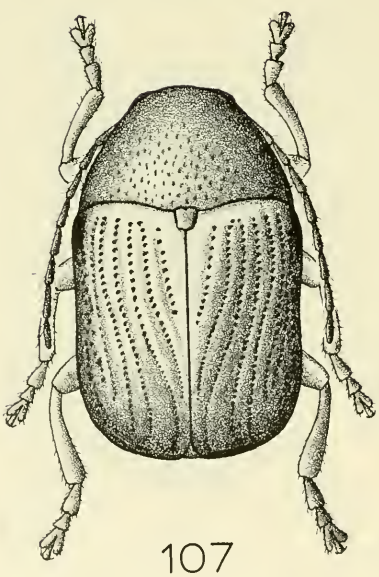

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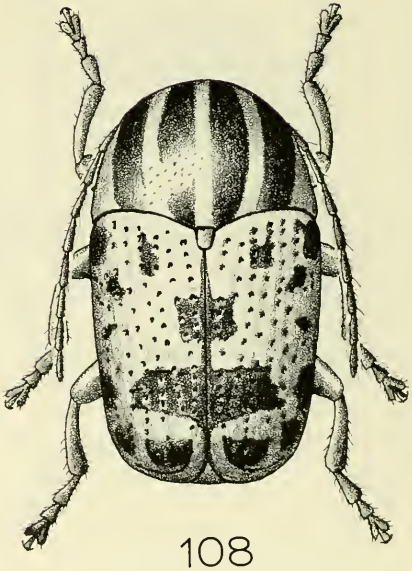

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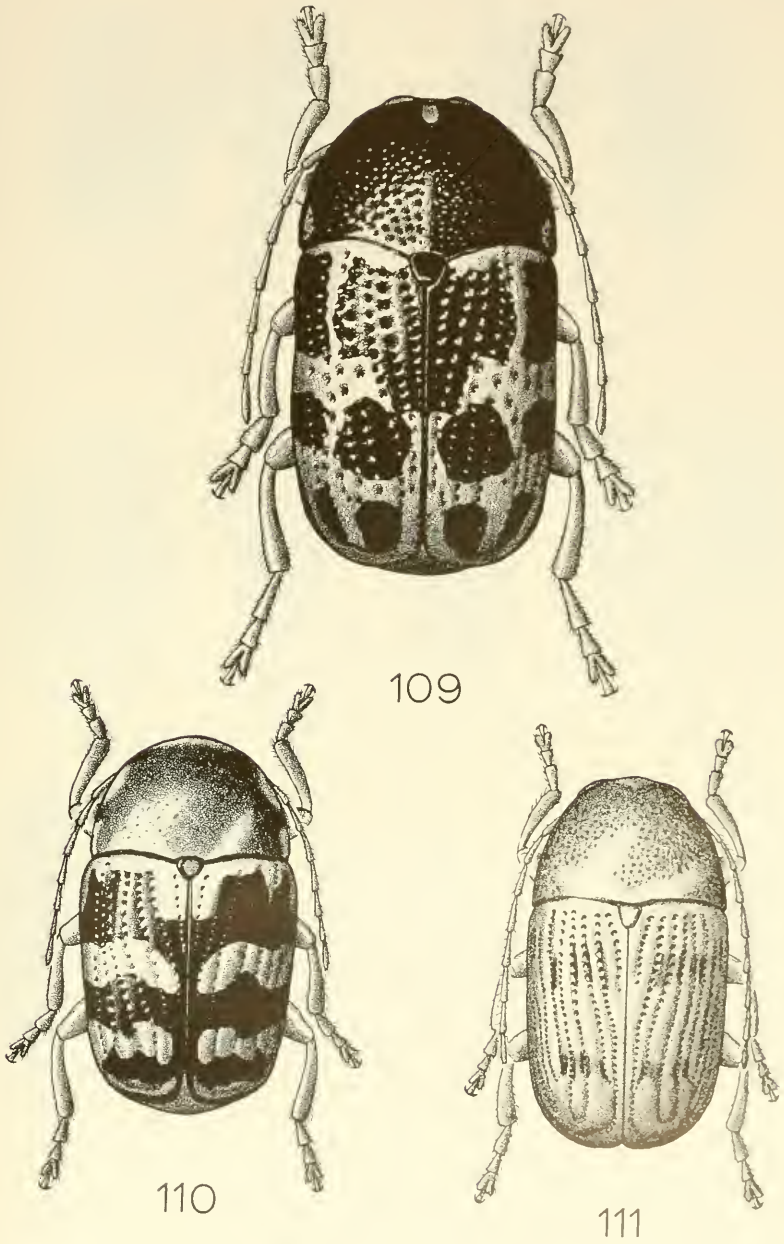
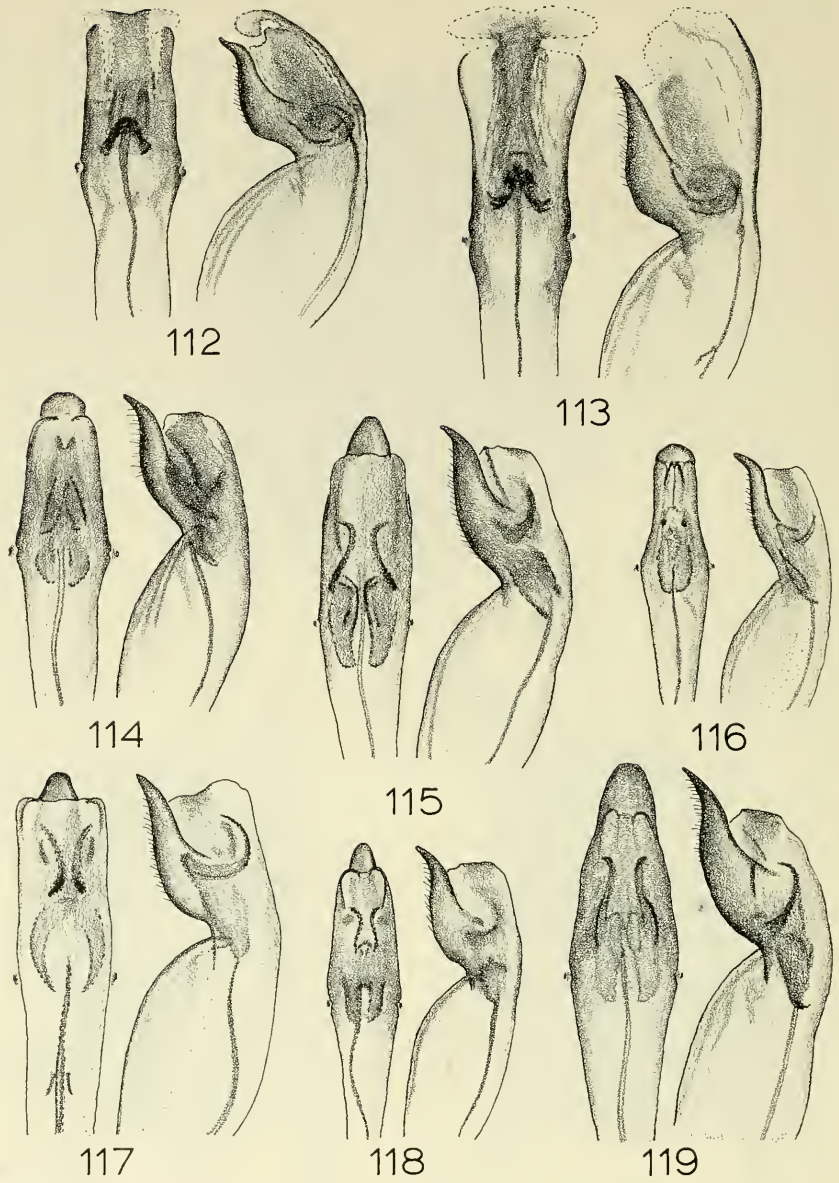
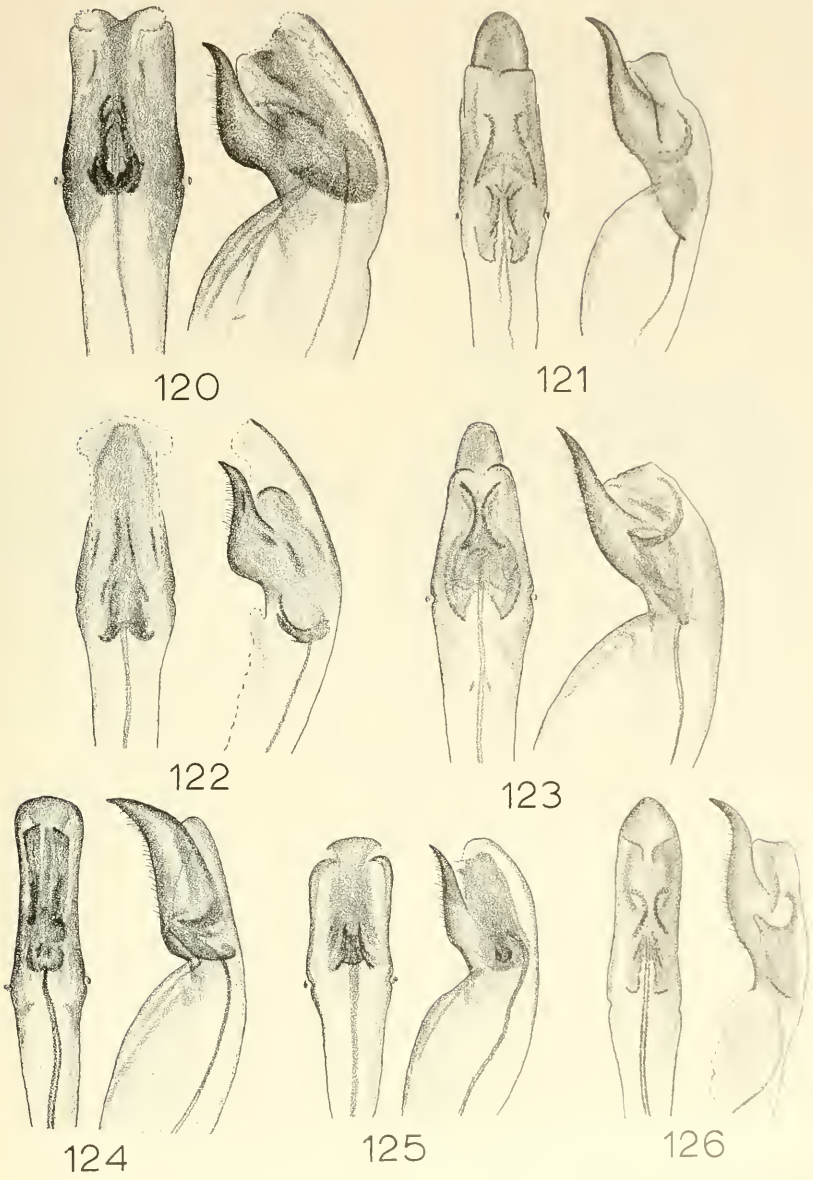
FIGURES 106–108.—Adults, dorsal views: 106, *C. lunatus*, new species, male holotype; 107, *C. obsoletus indistinctus*, new subspecies, male holotype; 108, *C. pseudomaccus*, new species, male holotype.



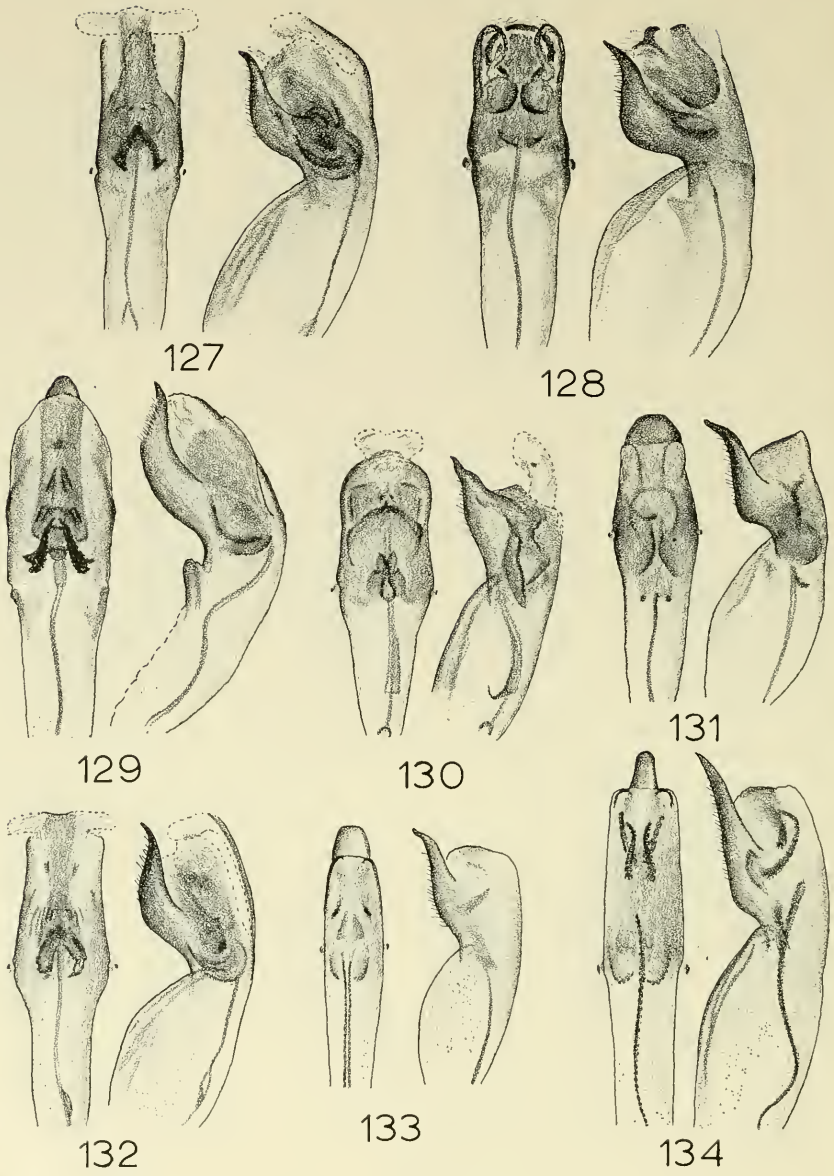
FIGURES 109–111.—Adults, dorsal views: 109, *C. virginiensis*, new species, male holotype; 110, *C. triundulatus*, new species, male holotype; 111, *C. vapidus*, new species, male holotype.



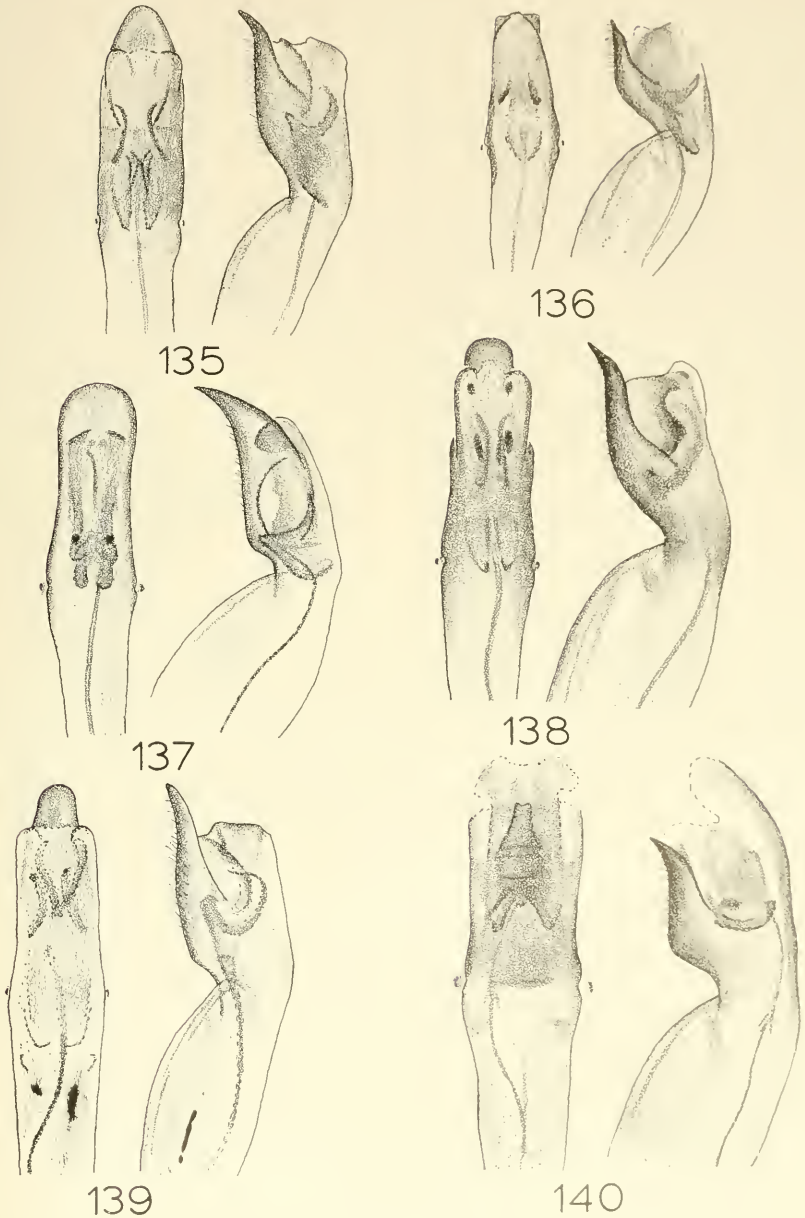
FIGURES 112–119.—Cleared male genitalia, dorsal and lateral views of each: 112, *C. binotatus*, new species, allotype; 113 *C. bivius* Newman, Tampa, Florida; 114, *C. astralosus*, new species, holotype; 115, *C. alternans jungovittatus*, new subspecies, holotype; 116, *C. amatus fractilineatus*, new subspecies, holotype; 117, *C. calidus* Suffrian, Medina, North Dak.; 118, *C. brunneovittatus* Schaeffer, Padre Isl., Texas; 119, *C. atrofasciatus* Jacoby, Williams, Arizona.



FIGURES 120–126.—Cleared male genitalia, dorsal and lateral views of each: 120, *C. auryi* Schaeffer, Brownsville, Texas; 121, *C. confluentus confluentus* Say, Mt. Hamilton, California; 122, *C. cupressi* Schaeffer, paratype, New Orleans, Louisiana; 123, *C. gibbicollis decrescens*, new subspecies, holotype; 124, *C. coxaniae* Schaeffer, paratype, Williams, Arizona; 125, *C. disruptus*, new species, holotype; 126, *C. dorsatus*, new species, holotype.



FIGURES 127–134.—Cleared male genitalia, dorsal and lateral views of each: 127, *C. leucomelas leucomelas* Suffrian, Morrison, Arizona; 128, *C. lunatus*, new species, holotype; 129, *C. maccus*, new species, holotype; 130, *C. guttulatus* Olivier, W. Springfield, Massachusetts; 131, *C. mucoreus* Leconte, Kentucky; 132, *C. pseudomaccus*, new species, holotype; 133, *C. notatus fulvipennis* Haldeman, Capron, Florida; 134, *C. obsoletus obsoletus* Germar, Mt. Pleasant, South Carolina.



FIGURES 135–140.—Cleared male genitalia, dorsal and lateral views of each: 135, *C. spurcus spurcus* Leconte, San Diego, California; 136, *C. vapidus*, new species, holotype; 137, *C. triundulatus*, new species, holotype; 138, *C. simulans conjungens* Schaeffer, El Paso, Texas; 139, *C. venustus venustus* Fab., Branchville to Beltsville, Maryland; 140, *C. virginiensis*, new species, holotype.

Synoptic List of Species

albicans Haldeman
alternans jungovittatus, new subspecies
amatus amatus Haldeman
amatus apiccdens Fall
amatus fractilineatus, new subspecies
arizonensis arizonensis Schaeffer
astralosus, new species
atrofasciatus Jacoby
aulicus Haldeman
badius Suffrian
basalis Suffrian
binominis binominis Newman
binominis rufibasis Schaeffer
binotatus, new species
bispinus Suffrian
bivius Newman
brunneovittatus Schaeffer
calidus Suffrian
    carinatus Leconte
castaneus Leconte
cerinus cerinus B. E. White
cerinus nevadensis B. E. White
confluentus confluentus Say
confluentus melanoscelus, new subspecies
contextus, new species
cowaniae Schaeffer
cribripennis Leconte
cuncatus Fall
cupressi Schaeffer
defectus Leconte
    nigrovittatus Jacoby
disruptus, new species
dorsatus, new species
duryi Schaeffer
egregius Schaeffer
fulguratus Leconte
gibbicollis gibbicollis Haldeman
gibbicollis decrescens, new subspecies
guttulatellus Schaeffer
    quatuordecimpustulatus Schaeffer
guttulatus Olivier
    lautus Newman
implacidus, new species
incertus Olivier
    lineolatus Haldeman
inscrtus Haldeman
    ellipsoidalis Casey
lateritius Newman
leucomelas leucomelas Suffrian
leucomelas trisignatus, new subspecies
leucomelas vitticollis Leconte
lunatus, new species
luteolus Newman
    sanfordi Blatchley
    sanfordensis Blatchley
maccus, new species
merus Fall
mucoreus Leconte
multisignatus Schaeffer
mutabilis Melsheimer
    discoideus Suffrian
    dispersus Haldeman
nanus Fab.
notatus notatus Fab.
notatus fulvipennis Haldeman
notatus quadrimaculatus Say
notatus sellatus Schaeffer
obsoletus obsolctus Germar
    ornatus Suffrian
obsoletus indistinctus, new subspecies
ochraceus Fall
pallidicinctus Fall
pinicola Schaeffer
pseudomaccus, new species
pubicollis Linell
pubiventris Schaeffer
pumilus Haldeman
    pseudolus Suffrian
quadruplex Newman
    quadriguttulus Suffrian
quercus Schaeffer
sanquinicollis sanquinicollis Suffrian
sanquinicollis nigerrimus Crotch
schreibersii Suffrian
    rugicollis Haldeman
simulans simulans Schaeffer
simulans conjungens Schaeffer
simulans eluticollis Schaeffer
snowi Schaeffer
spurcus spurcus Leconte
spurcus vandykei B. E. White
striatulus Leconte
texanus Schaeffer

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tinctus Leconte
fasciatus Say
triundulatus, new species
trivittatus Olivier
lixus Newman
vittatus Haldeman
trizonatus Suffrian
tricinctus Suffrian
umbonatus Schaeffer
vapidus, new species
venustus venustus Fab.
flaccidus Suffrian
venustus cinctipennis Randall
venustus hamatus Melsheimer
venustus ornatulus Clavareau
ornatus Fab.
venustus simplex Haldeman
virginiensis, new species

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